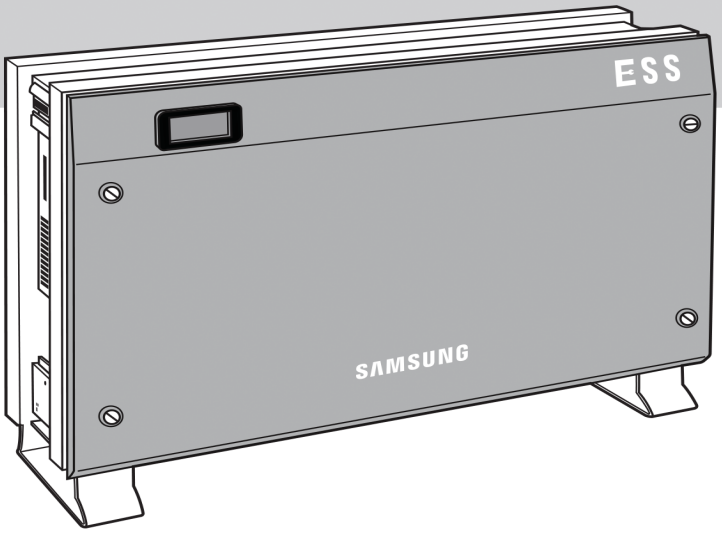
SAMSUNG SDI

ELSR362-00002

RES 3.6 kWh All In One

Installation Manual



	CAUTION
	▪ Do not operate with other components not approved by the ESS systems. (Connecting other products in parallel to Samsung SDI's products may result in abnormal operation.) ▪ The internet connection is required to use all functions of the ESS system. ▪ If you have a problem, please contact the installer. ▪ The Specifications of the product may be modified without prior notice to improve product quality.

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1. About this Manual

1.1 Valid Range

This is the installation manual for the 3.6 kWh All In One system. Please read this installation and user manual carefully before installing and operating the 3.6 kWh all in one system. It contains important safety instructions. The warranty will be void if you fail to follow the instructions in this manual.

1.2 Target Group

This installation manual applies only to the Samsung 3.6 kWh All in One.

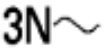
1.3 Manual Storage

The user manual and installation manual can be downloaded from the product download section at "https://myess.samsungsdi.com". The specifications of the product can be changed for improvement without notice.

Also, the software can be updated automatically without notice over the Internet.

1.4 Symbols Used

Symbols	Meaning
	CAUTION This symbol indicates a hazardous situation which could result in a light injury, if not avoided.
	NOTICE This symbol indicates a hazardous situation which could result in damage to the property, if not avoided.
	Information This symbol indicates valuable tips for optimum installation and operation of the product.

Number	Symbol	Description
1		Direct current
2		Alternating current
3		Both direct and alternating current
4		Three-phase alternating current
5		Three-phase alternating current with neutral conductor
6		Earth terminal
7		Protective conductor terminal
8		Frame or chassis terminal
9		Refer to the operating instructions
10		On (supply)
11		Off (supply)
12		Equipment protected throughout by double insulation or reinforced insulation
13		Caution: Risk of Electric Shock
14		Caution: Hot Surface

Number	Symbol	Description
15		Caution: Risk of Danger
16		In position of a bi-stable push control
17		Out position of a bi-stable push control
18		Input terminal or rating
19		Output terminal or rating
20		Bidirectional terminal rating
21		Caution: Risk of Electric Shock and Energy Storage Timed Discharge
22		Caution: Risk of Hearing Damage and Wear Hearing Protection Wear hearing protection
23		Do not dispose of the inverter with household wastes. For further information on disposal, refer to the installation manual provided.
24		The CE Indication: The relevant equipment complies with the requirements in the EC guidelines.

[Table 1-1: Symbol Description]

2. Safety

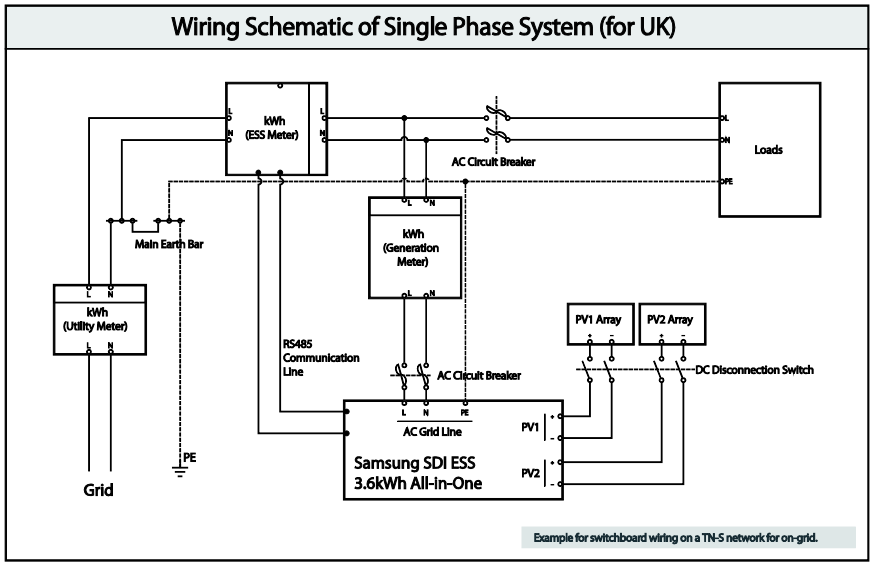
2.1 Intended Use

	NOTICE
	The 3.6 kWh All in One system is intended for residential use only. **The 3.6 kWh All in One system should not be used for commercial or building.**

The 3.6 kWh All in One system is designed for residential use. It is a single-phase, grid-connected system of solar energy sources and Li-on Battery energy storage.

The 3.6 kWh All In One system uses solar energy power connected to the input/output terminal installed on the side of the device in order to:
1) charge the Li-Ion battery energy storage,
2) provide a supply to the household load, and
3) convert direct current (DC) electricity of the battery to alternating current (AC) to discharge as household single-phase load or electric system.

This device should not be used for any purpose other than the purpose described in this installation manual. Any substitute use of this device, random change in any of its parts, and use of components other than sold or recommended by Samsung SDI will nullify the product's guarantee. For example, Samsung Li-Ion battery energy storage should not be replaced by other manufacturer's battery storages. For further information on proper use of this device, contact the Samsung SDI Service line or visit at "www.samsungsdi.com".



[Figure 2-1: Connection Diagram]

2.2 Safety Precautions

CAUTION

High voltages in power conditioning circuits. Lethal hazard of electric shock or serious burns.

All work on the PV modules, inverters, converters, and battery systems must be carried out by qualified personnel only.

Wear rubber gloves and protective clothing (protective glasses and boots) when working on high voltage/high current systems such as INVERTER and battery systems.

CAUTION

Li-Ion battery energy storage system (ESS) inside. When assembling the system, do not intentionally short the positive (+) and negative (-) terminals with metallic object.

All work on the ESS and electrical connections must be carried out by qualified personnel only. The ESS within 3.6 kWh All In One provides a safe source of electrical energy when operated as intended and as designed.

A potentially hazardous circumstance such as excessive heat or electrolyte mist may occur due to improper operating conditions, damage, misuse and/or abuse. The following safety precautions and the warning messages described in this section must be observed. If any of the following precautions are not fully understood, or if you have any questions, contact Customer Support for guidance (see chapter 13).

The safety section may not include all regulations for your locale; personnel working with 3.6 kWh All In One must review applicable federal, state and local regulations as well as the industry standards regarding this product.

CAUTION

This product is intended to be used for PV source inputs and residential home grids (AC 230V). If not used as intended, the protection provided by the equipment may be impaired.

CAUTION

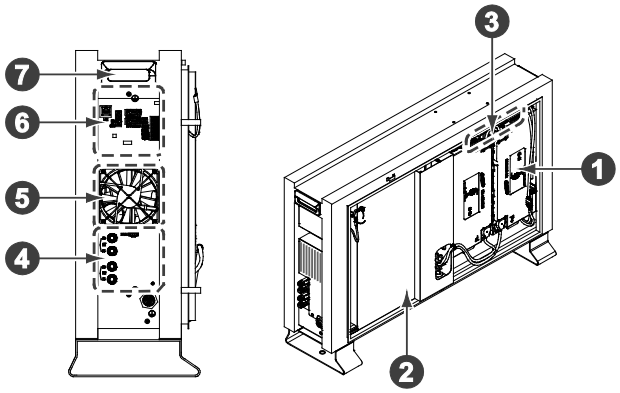
This device is designed appropriate for two-PV string structure. Therefore, the PV string 1 and PV string 2 must be connected to PV input 1 and PV input 2, respectively.

Do not split one PV string output for connecting it into the PV input terminal 1 and input terminal 2.

2.3 Product Overview

The All In One system includes the PV inverter, battery charger/discharger, Li-Ion battery, and EMS.

The basic operating modes consist of PV generation mode, PV generation + charge/discharge mode. The operation mode of this product is automatically determined by the EMS algorithm.



[Figure 2-2: Part View of Samsung All in One]

No.	Description
1	Li-Ion battery
2	INVERTER (PV inverter and battery charger / discharger)
3	Tray BMS
4	Input / Output terminal (MC4-2set and Grid connection terminal -L/N/PE)
5	Cooling Fan
6	Communication
7	Carrying handle

[Table 2-1: Part Description]

2.3.1 Basic Specifications

Item	3600-UK	4600-UK
PV Data (DC)		
Max. input total power	6.6 kWp	
Max. input power per string	3.3 kWp	
Max. input voltage	550 V	
Min. input voltage/Initial input voltage	125 V/150 V	
MPPT voltage range	125 V~500 V	
Max. input current per string	15 A	
Number of independent MPPT trackers	2	
Battery Data (DC)		
Battery capacity	3.6 kWh	
Battery voltage range/nominal voltage	48.0 V~65.9 V/60 V	
Battery Max. current	46.3 A	
Battery nominal current	33.3 A	
Discharge of depth	90% (6000 cycles)	
Nominal DC/DC power	2.0 kW	
DC/DC converter technology	Isolated	
Grid Data (AC)		
Rated power (at 230V, 50 Hz)	3.6kW(*)	4.6 kW(*)
Max. apparent power	5 kVA	
Nominal voltage/range	230 V/184 V~264 V	
Rated power frequency/range	50 Hz/47.5 Hz~51.5 Hz	
Max. current	16A	20A
Max. allowed current for fuse protection	32 A	

(*): **It can be set 3600W or 4600W by software when installing.**

[Table 2-2: Basic Specifications]

2.3.2 Grounding the PV Inverter

The PV inverter complies with the local requirements for grounding the PV inverter. Samsung SDI recommends connecting and grounding the PV inverter's frame and other electricity conducting surfaces in such a way that there is continuous conduction in order to achieve maximum protection for systems and persons. And the PV inverter's DC (+) pole and DC (-) pole are not permitted to be grounded.

3. Package Removal and Inspection

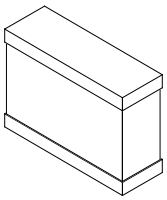
	CAUTION
	Included in this box are a battery and printed circuit board, and the entire weight amounts to 95 kg. Therefore, special care must be taken in handling. Make sure to have at least two persons deliver and remove the package.

3.1 Package Removal and Tray Assembly

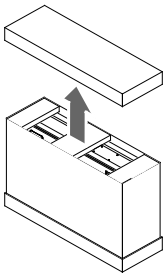
3.1.1 Removing the Enclosure Package

As shown in the figure in this section, remove the package components from the enclosure in the following order.

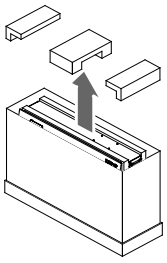
1. Place the system on the installation location.



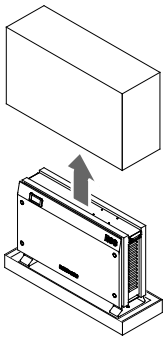
2. Open the upper part of the battery case.



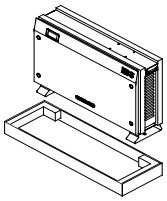
3. Remove both sides of the cover in the front of the product.



4. Lift the package.



5. Open the side support on the bottom.



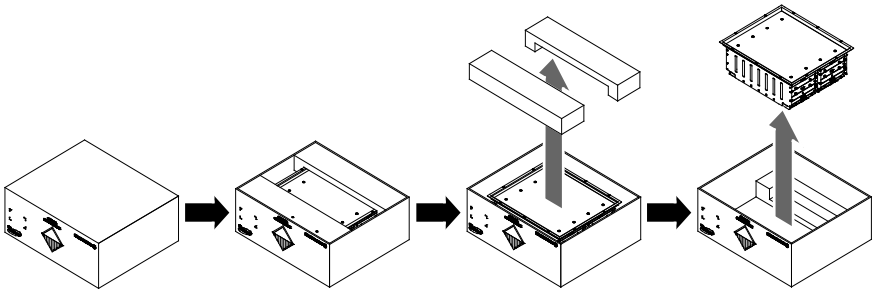
[Figure 3-1: Process for the enclosure package removal]

3.1.2 Removing the Battery Tray Package

As shown in the [Figure 3-2], remove the package for the battery tray.

1. Open the box cover of the product.
2. Remove the buffers with a straight pull.
3. Take out the battery tray by grabbing the handle and pulling it up.

Note: The tray weighs approximately 45 kg, so make sure to have at least two persons lift it.

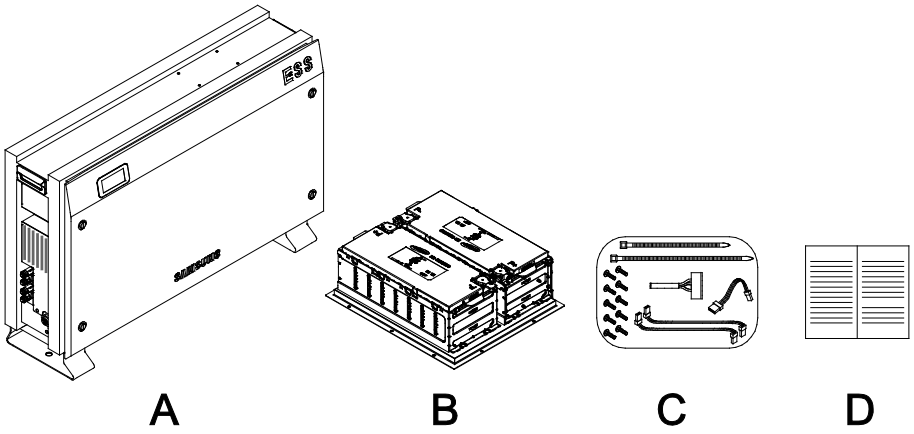


[Figure 3-2: Process for the battery package removal]

3.1.3 Checking Components on the Packing List

Once the product has been delivered, refer to the figure [Figure 3-3] and [Table 3-1], identify the entire components included in the package and the correct number of the quantity listed in the table.

Packing List



[Figure 3-3: Packing List]

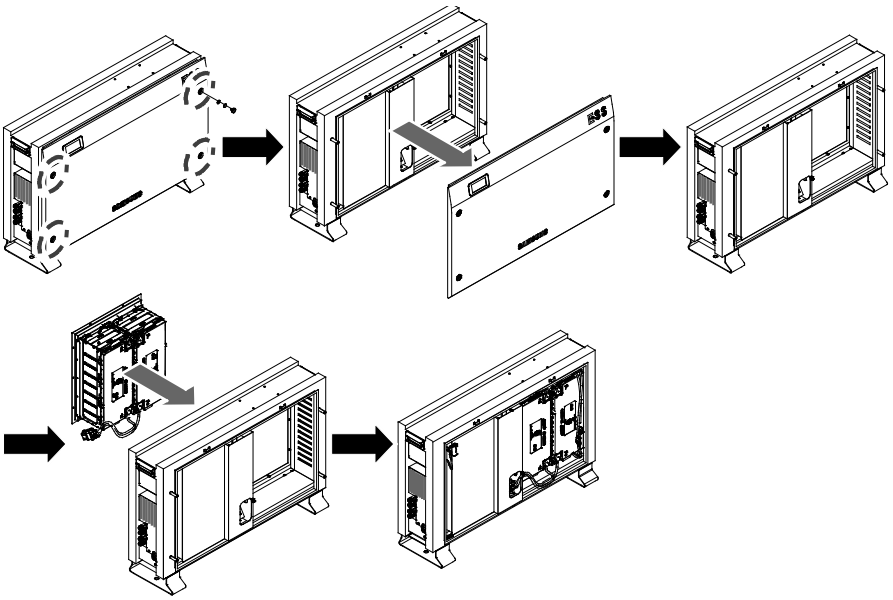
Object	Part Name	Code No.	Quantity
A	INVERTER ASSY	SJ94-00108B	1
B	TRAY ASSY (2nd Module)	ELPT362-00002	1
C	1. SCREW(M4xL16) 2. EXTENTION WIRE 3. EXTENTION WIRE (*) 4. EXTENTION WIRE 5. CABLE TIE (A: Long, B: Short) 6. JUMPER WIRE	SJ81-01146 3901-000819 3901-000820 3901-000821 - 3901-000859	10 1 1 1 2 1
D	Installation Quick Guide Manual	SJ68-02069B	1

(*): 3. EXTENTION WIRE may not be needed depending on the type of battery tray

[Table 3-1: Component Description]

3.1.4 Assembling the Battery Tray

The [Figure 3-4] shows the assembly process for the battery tray. Refer to Clause 5.4 and assemble the battery tray as described in it.



[Figure 3-4: Process for the battery assembly]

3.2 Checking for damage in Delivery

When opening the box that contains Samsung 3.6 kWh All In One system in it, check for any possible damage caused in transit and ensure the correct number of the components therein. If there is a scratch on the enclosure, contact your local dealer for inspection and service.

3.3 Identifying Samsung 3.6 kWh All in One

Attached on the enclosure of this product is the Type Label where the identity of this product is described. For safe usage, make sure that the following product information is indicated on the Type Label.

- Product Name
- Device Type (Model)
- Serial Number (Serial No.)
- Device-specific characteristics
- Certification Lists
- Warnings and Notification

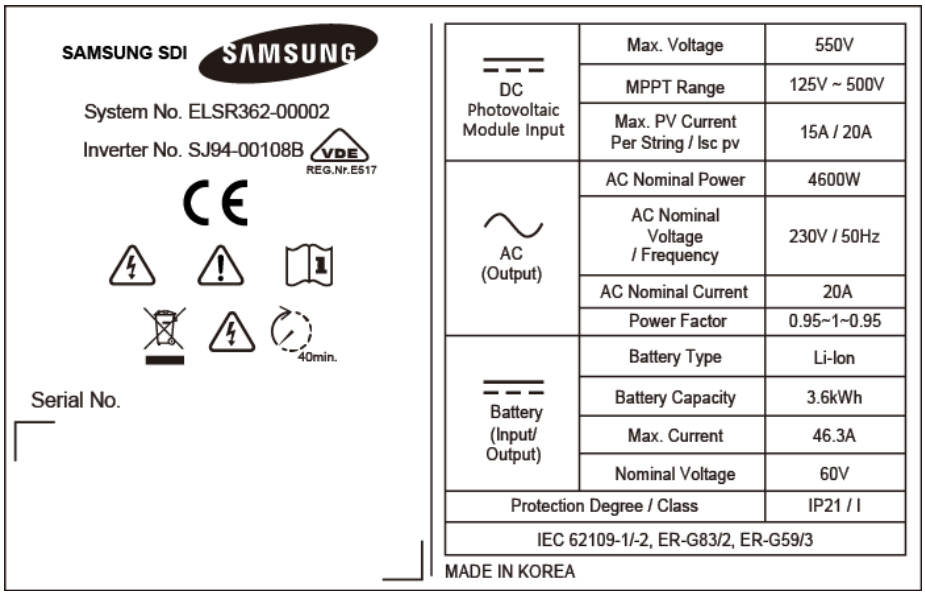
The model No. of 3.6 kWh All In One system is defined as below.

- ELSR362-00002
  - ELSR: Residential application
  - 36: Battery capacity (x0.1kWh)
  - 2: Battery capacity group (Less than 10kW)
  - 00002: product line number

The model No. of INVERTER (power conditioning system) is defined as below.

- SJ94-00108B
  - SJ: battery for ESS
  - 94: Ass'y
  - 00108: product number
  - B: National Code (UK)

The Type Label is shown in the [Figure 3-5].



DC Photovoltaic Module Input	Max. Voltage	550V
	MPPT Range	125V ~ 500V
	Max. PV Current Per String / Isc pv	15A / 20A
AC (Output)	AC Nominal Power	4600W
	AC Nominal Voltage / Frequency	230V / 50Hz
	AC Nominal Current	20A
	Power Factor	0.95~1~0.95
Battery (Input/ Output)	Battery Type	Li-Ion
	Battery Capacity	3.6kWh
	Max. Current	46.3A
	Nominal Voltage	60V
Protection Degree / Class		IP21 / I
IEC 62109-1/-2, ER-G83/2, ER-G59/3		

MADE IN KOREA

[Figure 3-5: Name Plate]

4. Installation

4.1 Selection of Installation Location

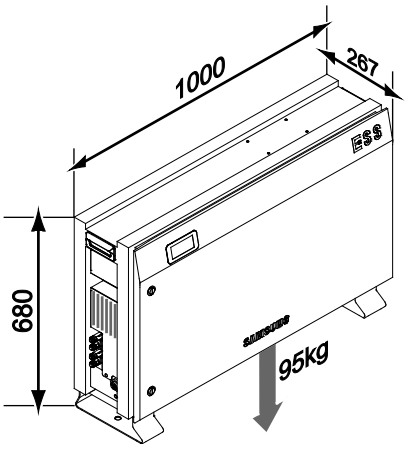
	CAUTION Danger to life due to fire or explosion! Danger to life due to high voltages! Despite careful construction, a fire can occur with electrical devices. Do not install the 3.6 kWh All In One on the following locations: On flammable construction materials; In potentially explosive areas; and In areas where highly flammable materials are stored!

	CAUTION Li-Ion battery energy storage is equipped within 3.6 kWh All in One. The ESS within 3.6 kWh All In One provides a safe source of electrical energy when operated as intended and as designed. A potentially hazardous circumstance such as excessive heat or electrolyte mist may occur due to improper operating conditions, damage, misuse and/or abuse. The following safety precautions and the warning messages described in this section must be observed. If any of the following precautions are not fully understood, or if you have any questions, contact Customer Support for guidance. The Safety Section may not include all regulations for your locale; Personnel working with 3.6 kWh All In One must review applicable federal, state and local regulations as well as the industry standards regarding this product.

	CAUTION All work on the ESS and electrical connections must be carried out by qualified personnel only.

4.1.1 Dimensions and Weight

Once the 3.6 kWh All In One system has been assembled, its dimension is 1000 x 680 x 267mm, and its weight is approximately 95kg. The [Figure 4-1] and [Table 4-1] show the outer dimensions and the weight of the device after assembly, respectively.



[Figure 4-1: Dimension of All in One]

	Battery	Inverter (Include case)	Total
Weight	45kg	50kg	95kg

[Table 4-1: Weight of All in One]

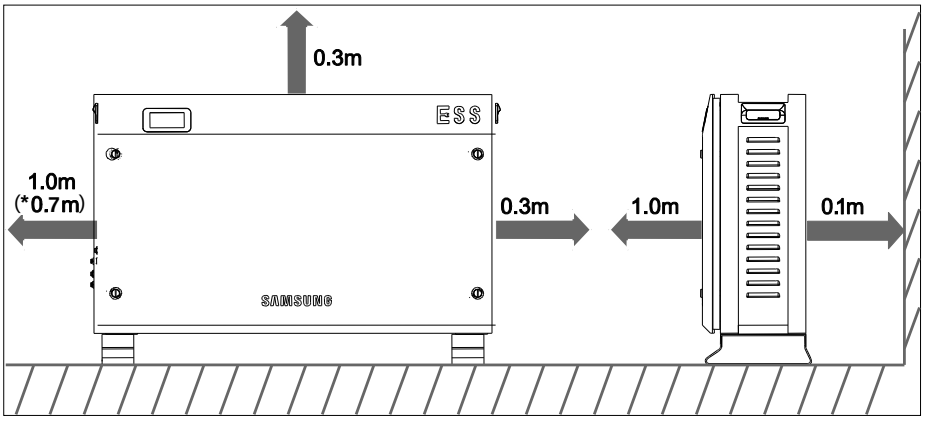
4.1.2 Ambient Conditions and Temperatures

Identify a proper installation location to install and remove the device easily at any time. This device must be located within reach distance.

The ambient temperature of the installation location will range from -10°C to +40°C.

4.1.3 Minimum Clearance

This device is required to maintain a minimum clearance distance for the safe installation of the product. Refer to the [Figure 4-2] to secure enough space and keep a distance of 0.1m from the wall, 1m in the front of the device, 1m and 0.3m on each side, and 0.3m on top.



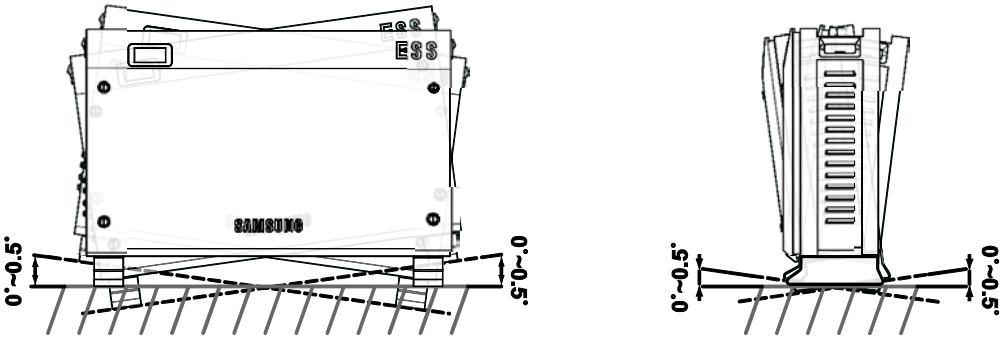
(*) It can be set 3600W when installing.

[Figure 4-2: Minimum Clearance for All in One]

4.1.4 Position (Location Selection)

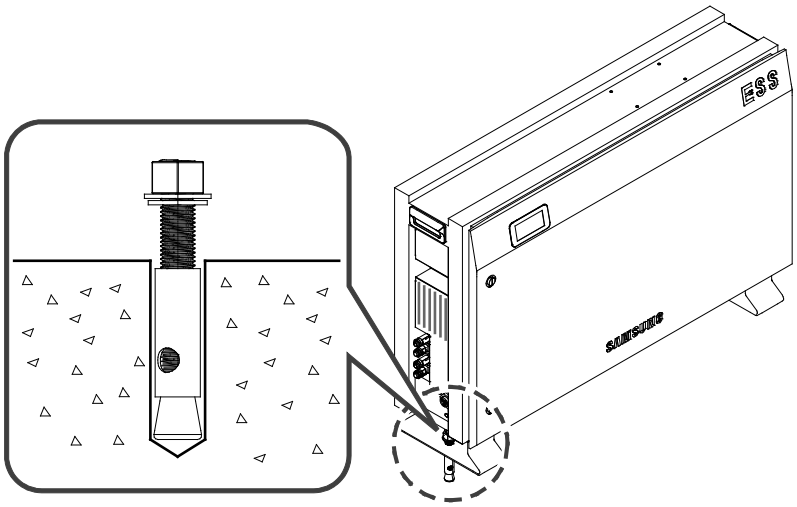
As shown in the [Figure 4-3], install the device on a flat surface. (Front, back, left, right gradient within ±0.5°)

To allow for natural ventilation, the side of the system must be kept away from the wall about 0.3m at least. Make sure not to have foreign substances and objects stuck in the blowing fan, ventilation entrance and exit sides.

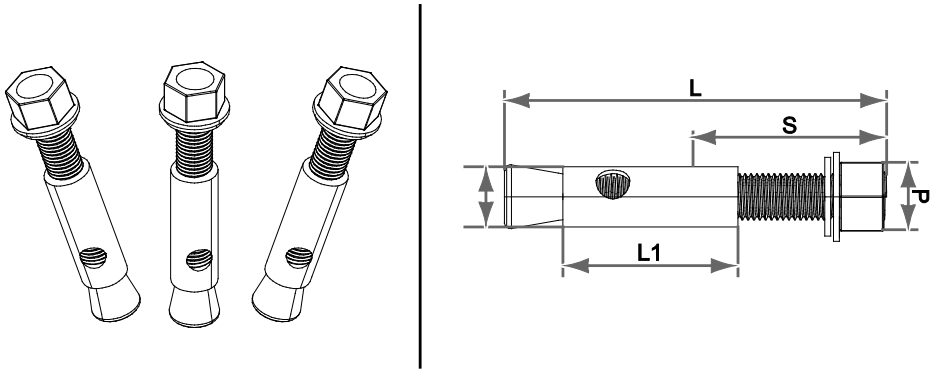


[Figure 4-3: Restriction for the surface gradient]

4.2 Mounting Instructions



[Figure 4-4: Spanner for fastening anchor nuts]



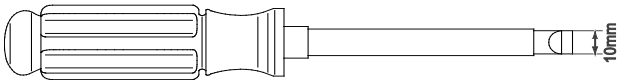
[Figure 4-5: Anchor Bolt]

Screw name	L	S	D	L1	Drill Used	Drill depth (Min.)	Tensile capacity (Max.)	Shear Capacity (Max.)
1/2 (M12)	100	60	17	50	17	55 (mm)	3,200 (kgf)	3,400 (kgf)

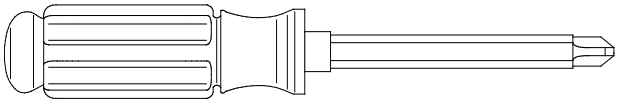
[Table 4-2: Specifications for anchor bolt]

1. Select the drill proper for specifications for drilling specifications.
2. Remove the dust from the hole, then separate the nut and the washer to insert both the bolt and the cap.
3. Set the product in place, assemble the washer and the nut to the bolt, and then use the spanner to fasten the nut (7N·m).

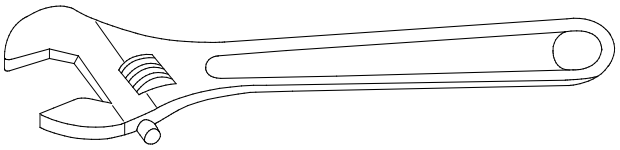
Required tools for installation



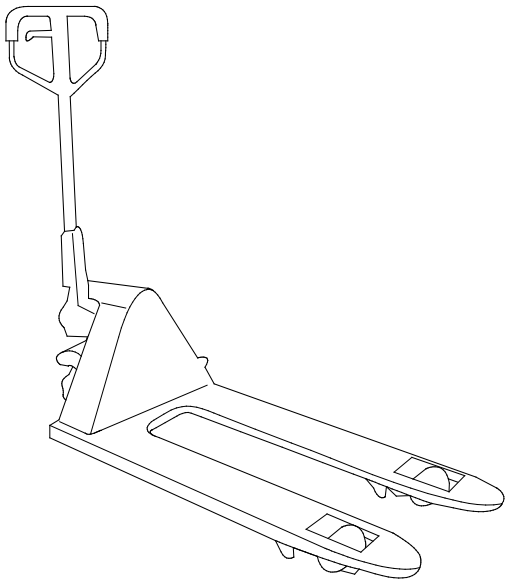
[Figure 4-6: A Flat head driver for the front cover knob (larger than 10mm)]



[Figure 4-7: The Plus head driver (No.2) for the tray, the side cover, and grounding]



[Figure 4-8: A spanner for fastening use]



[Figure 4-9: A fork lifter with height of 85-200mm]

5. Electrical Connections

NOTICE

The 3.6 kWh All In One system can be damaged by static discharge.
Before you touch a component inside the 3.6 kWh All in One, ground yourself by touching PE or a grounded object

CAUTION

When handling with the Li-Ion Battery Tray for the 3.6 kWh All in One, you must wear the following personal protective equipment:

High voltage rated rubber gloves

Safety goggles or other protective eye equipment

40-minute standby period of time to complete discharging in the system before testing electrical parts inside the system!

Follow the guidelines below when handling the Li-Ion Battery Tray.

Do not intentionally short circuit the positive (+) and negative (-) terminals with a metallic object.

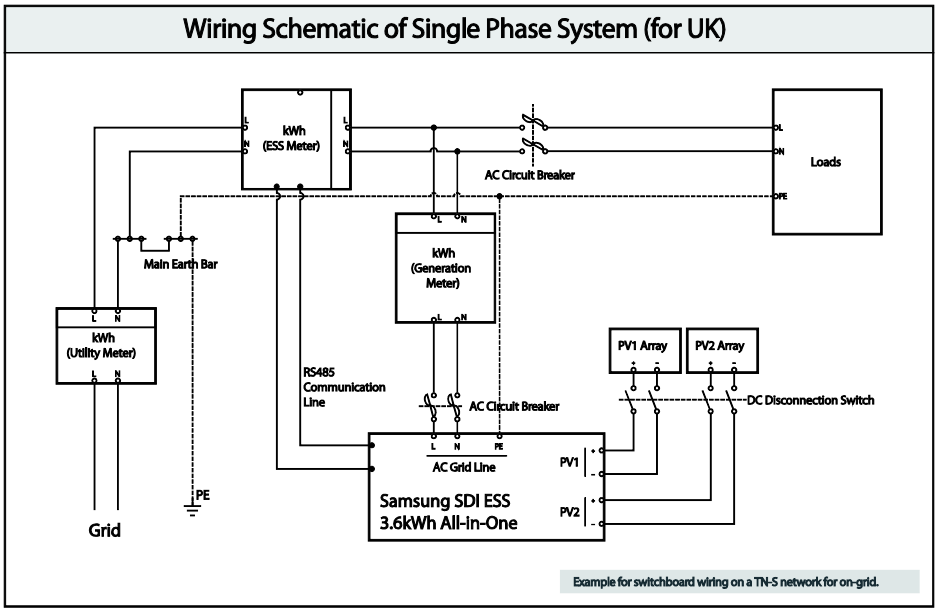
Do not remove the cap on the terminals. If the cap is removed, avoid contact between the metals and the battery terminals. Do not damage the screw thread.

Do not use seriously scarred or deformed battery. Dispose immediately according to proper regulations.

Do not damage sheath of cable and connectors.

5.1 The Overview of Electrical Connection

The 3.6 kWh All In One has two solar energy inputs (PV1, PV2). 3.3 kW (per string) is the maximum output for each PV input. The AC output of All in One is connected to the Home Load and the Grid. Between the Home Load and the Grid, the Digital Energy Meter is placed for power metering. The AC circuit breaker and DC Disconnect switch in the distribution box are installed between the All in One for safety reasons.

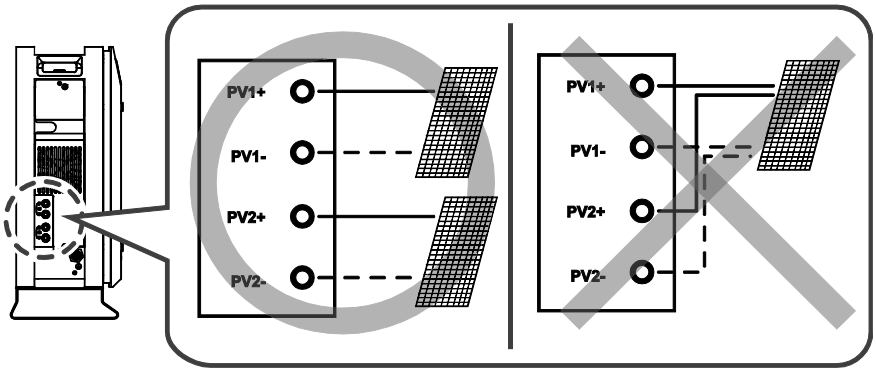


[Figure 5-1: Electrical connections]

As shown in the [Figure 5-2][Figure 5-2: PV connections], the 3.6 kWh All In One uses the two independent channels of the PV Input ({PV1+, PV1-}, {PV2+, PV2-}). They are used independently for running the maximum power from the sources of PV1 and PV2. Two channels are recommended for independent use for the two PV Inputs. Make sure not to connect one PV string in parallel with the two independent PV inputs (PV1, PV2). (Refer to 3.6 kWh All In One Solar energy input connection in the [Figure 5-2]).

A PV string must not be commonly connected to the two input terminals of the All in One system. That is, make sure not to connect the split wiring from one PV string output with the two independent PV inputs (PV1+, PV1- and PV2+, PV2-). (Refer to the PV String connection method in the [Figure 5-2]).

※ ***PV modules shall have an IEC61730 Application Class A rating or equivalent.***



[Figure 5-2: PV connections]

As shown in the [Table 5-1], the input / output power cables correspond to the AC/ DC input / output specifications for this system.

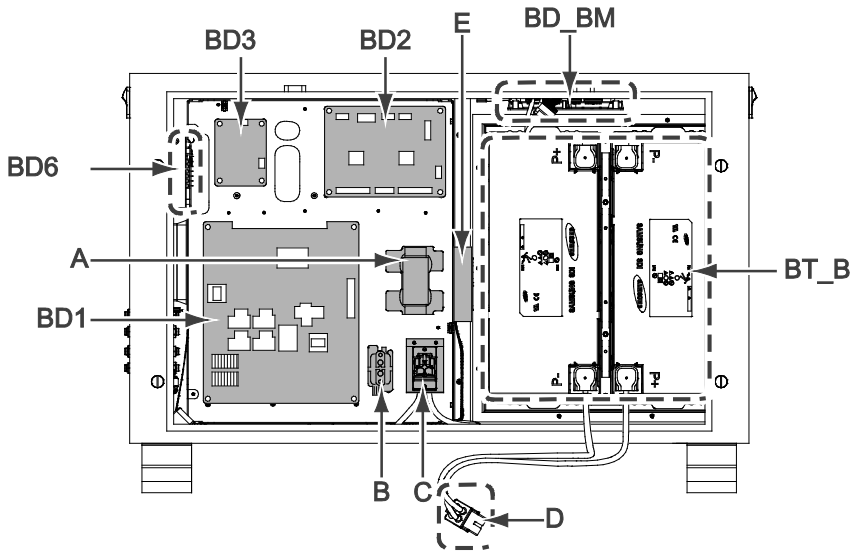
Recommended cables for the 3.6 kWh All in One

	Area	Insulation	Color code
Grid (L,N)	6mm^2	600V or more	Black
PE	6mm^2	600V or more	Green with yellow lines
PV (+), (-)	6mm^2	700V or more	Black

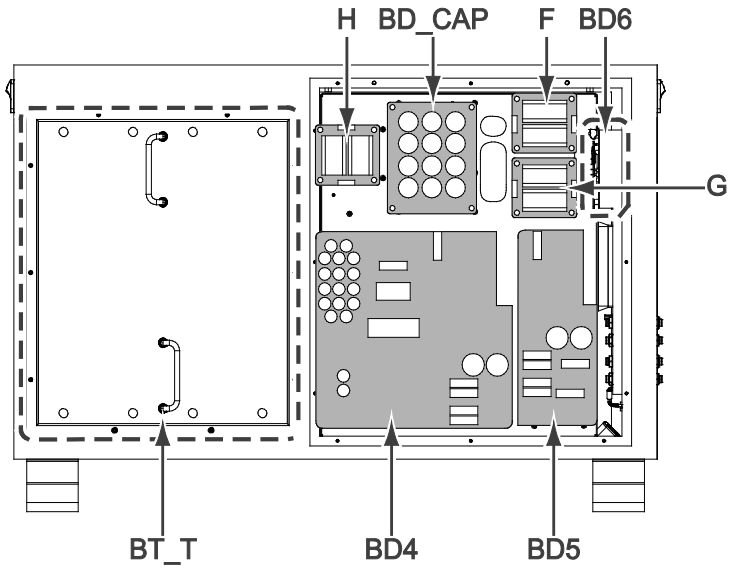
Object	Part List	
A	AC reactor	INVERTER
B	DC relay	INVERTER
C	BDC side connector (BATT-A)	INVERTER
D	Battery side connector (BATT-B)	BATTERY
E	FAN2	INVERTER
F	PV1 reactor	INVERTER
G	PV2 reactor	INVERTER
H	BDC reactor	INVERTER
I	FAN1	INVERTER
BD 1	Board1 (PN. SJ92-01425A)	INVERTER
BD 2	Board2 (PN. SJ92-01467A)	INVERTER
BD 3	Board3 (PN. SJ92-01434A)	INVERTER
BD 4	Board4 (PN. SJ92-01426A)	INVERTER
BD 5	Board5 (PN. SJ92-01427A)	INVERTER
BD 6	Board6 (PN. SJ92-01424C)	INVERTER
BD_BM	Board battery management (PN. SJ92-01405A)	BATTERY
BD_CAP	Board CAP (PN. SJ92-01428A)	INVERTER
BT_B	Battery Tray bottom view	BATTERY
BT_T	Battery Tray top view	BATTERY
CP	Communication part	INVERTER
E_I/O	Electrical I/O part	INVERTER

[Table 5-1: Component Description]

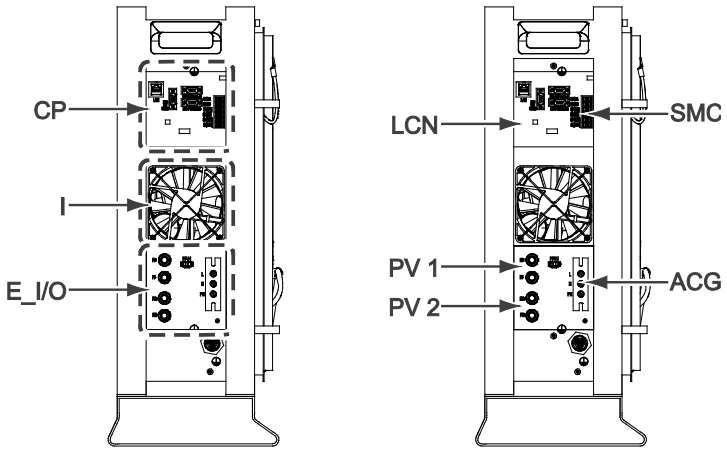
The [Figure 5-3] shows the overall drawing of the 3.6 kWh All in One. Please refer to the figure of the drawing for installation and maintenance.



[Figure 5-3: Front Inside View]



[Figure 5-4: Rear Inside View]



[Figure 5-5: Side View]

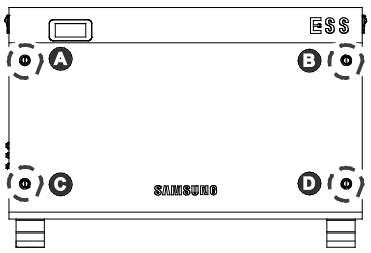
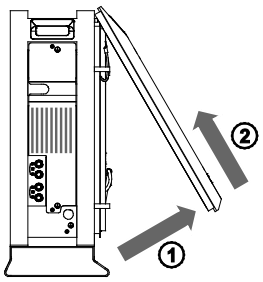
Object	Part List
LCN	LAN Connector
SMC	Energy Meter Connector
PV 1	PV input 1
PV 2	PV input 2
ACG	AC Grid inputs

[Table 5-2: Part List]

5.2 Opening the Front Case Cover

	NOTICE The LCD connector and ground are connected between the top left of the front cover and the main body. Be careful when you detach the front cover. Make sure to connect the connector and ground before reassembling the front cover.

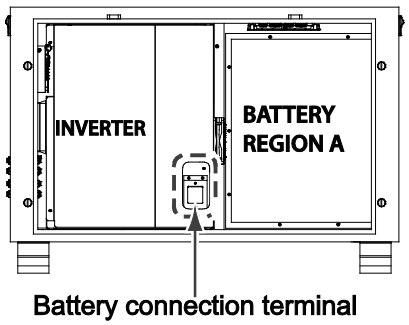
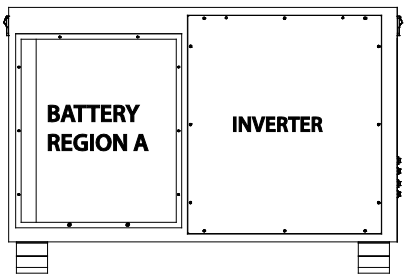
As shown in the [Table 5-3], 3.6 kWh All In One is delivered with the blue front case cover attached. Remove the front case cover for electrical connections.

	
Front View Turn the screws (A, B, C, and D) counterclockwise to assemble. 	Side View **1.** Pull the lower end turning 15 degree upwards. **2.** Push upward separate the front case cover from the upper ring.

[Table 5-3: Front Case Open Process]

5.3 The Overview of the Connection Area

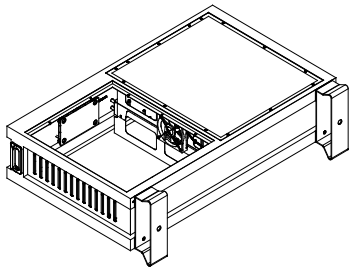
The [Table 5-4] shows the inner structure of the 3.6 kWh All In One when the front case cover is removed (Section 5.1).

Inside Front View	Inside Rear View
	
On the front part of the inside of the system, the INVERTER circuit is blocked by the safety shield, thus leaving the space for battery installation (Region A) available. The BMS circuit board is shown on the upper part of the Battery region, in which the four battery connector is located. A battery power connection terminal is shown on the lower part of the device	On the rear part, the INVERTER shield is shown, but other connection terminals are not.

[Table 5-4: Front and Rear view of All in One]

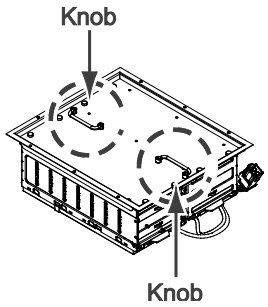
5.4 Battery Installation

1. As described in Subsection 5.2, remove the front case and lay the main body of the system on a flat surface with the inside rear view faced upward. When you lay down the system, make sure to have at least two persons work together for safety.



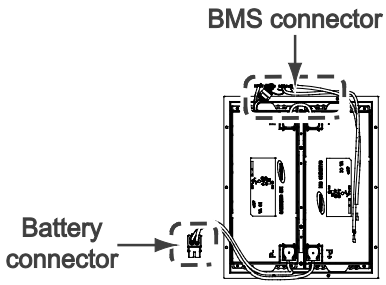
[Figure 5-6: Rear Inside View]

2. Prepare the battery tray to dock the battery on the main body and have at least the two persons work together because the battery weighs much. The [Figure 5-7] shows the battery tray seen from the enclosure. The knobs are located on the battery tray plate, and the battery is located on the opposite side of the knob enclosure.



[Figure 5-7: Battery Tray Rear View]

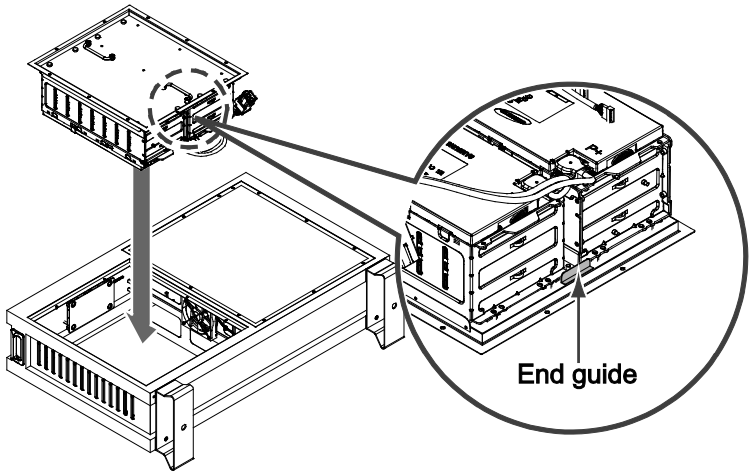
3. As seen in the [Figure 5-8] of the battery tray, the output cable is connected with the connector, and four BMS and the signal cables come out from the battery module.



[Figure 5-8: Battery Connection]

4. With the main body laid down, make sure to have at least two persons hold the tray and lit it up. As shown in the [Figure 5-9], the battery module must be docked to ensure that the end guide faces the leg of the exterior case of the main body.
When docking the battery, make sure not to have the battery cable caught on the battery frame. After docking the battery, fasten the screws to fix the tray and the main body. Make sure to have two persons lift the battery tray.

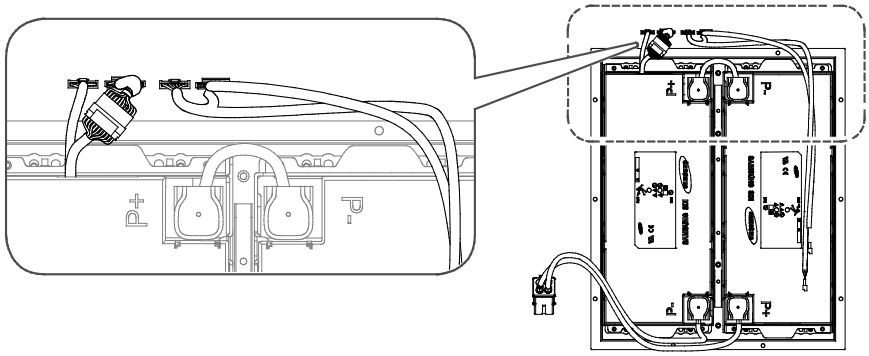
Use a torque screwdriver of 1.2-1.8N·m to tighten the screws on the battery tray.



[Figure 5-9: Battery Docking description]

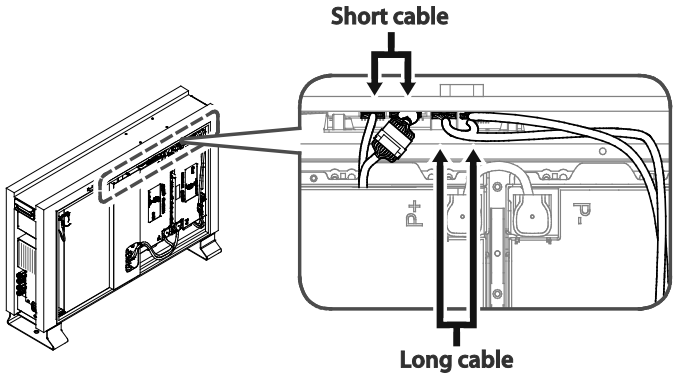
5.5 Inner Wiring Connection (Power and Signal Wire Connection for BMS)

1. The [Figure 5-10] shows the lead of the battery tray. As shown in the figure, two short lines and two long leads come out from the battery. Plug four cable lines on the Tray BMS into the upper BMS socket. Plug the two long lines on to the right side of the BMS, then plug the short two lines on to the left side of it.



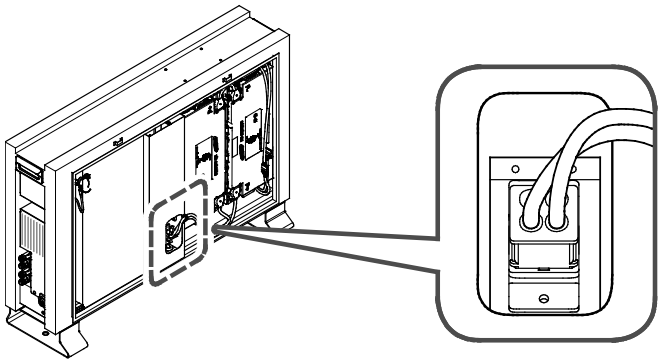
[Figure 5-10: Battery to BMS Connection]

2. As described in Subsection 5.4, fix the battery on the 3.6 kWh All in One, then check the signal line of the battery part on the opposite side. All of the cables can be stuffed in the corner of the enclosure. They do not need to be bound with a cable tie. The two shorter cables on the left can be stuffed near the tray BMS while the two longer cables on the right can be stuffed in the right corner of the enclosure.



[Figure 5-11: Cable Stuff Method]

3. Finally, connect the power cable line coming out from the battery with the battery power terminal in the middle. Connect BATT-A and BATT-B.



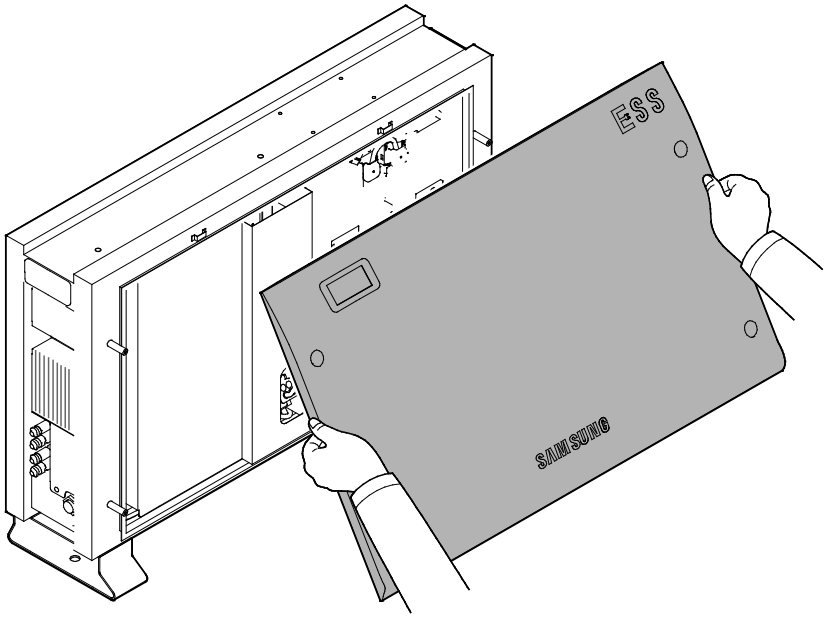
[Figure 5-12: Battery Power Connection]

- BATT-A: Connector on the BDC side,
- BATT-B: Connector on the battery side

5.6 Closing the Front Case Cover

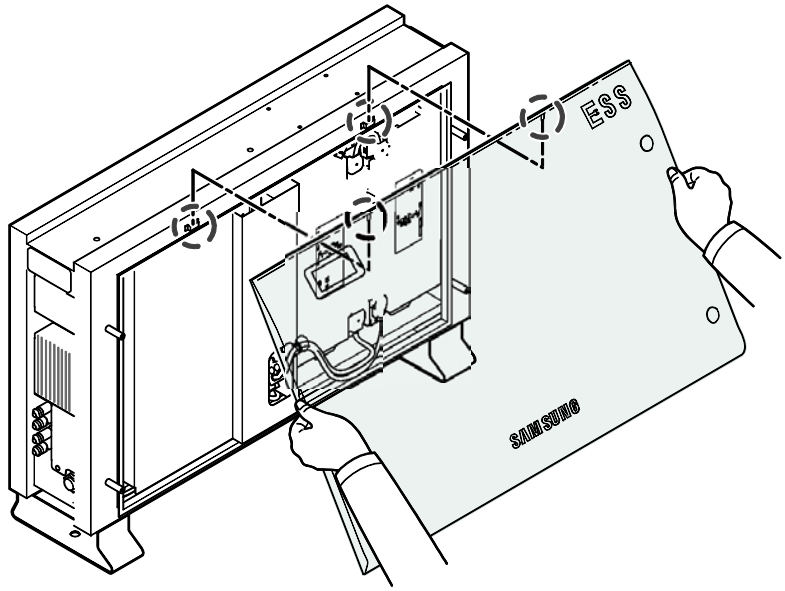
	NOTICE
	The LCD connector and ground are connected between the top left of the front cover and the main body. Be careful when you detach the front cover. Make sure to connect the connector and ground before reassembling the front cover.

1. Hold the front case cover with both hands.



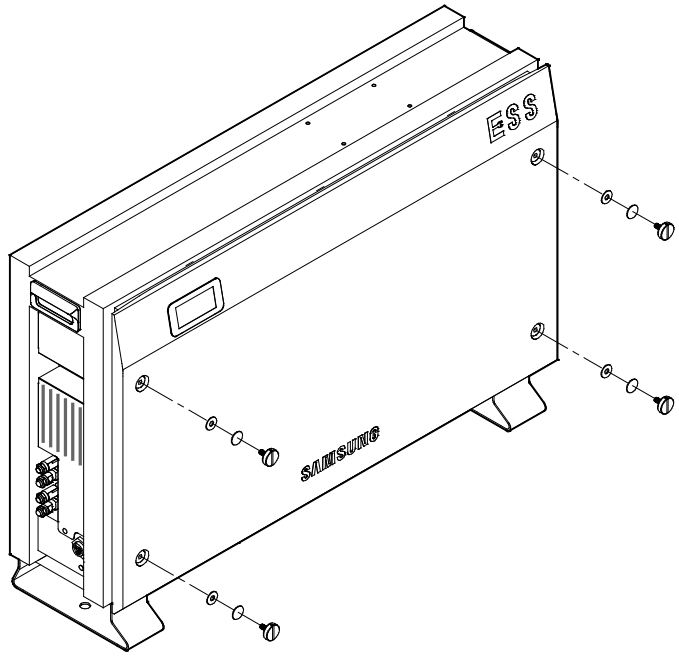
[Figure 5-13: Front Cover Assembly process 1]

2. Hang the product cover on the upper surface of the enclosure, then push the product cover forward to close it.

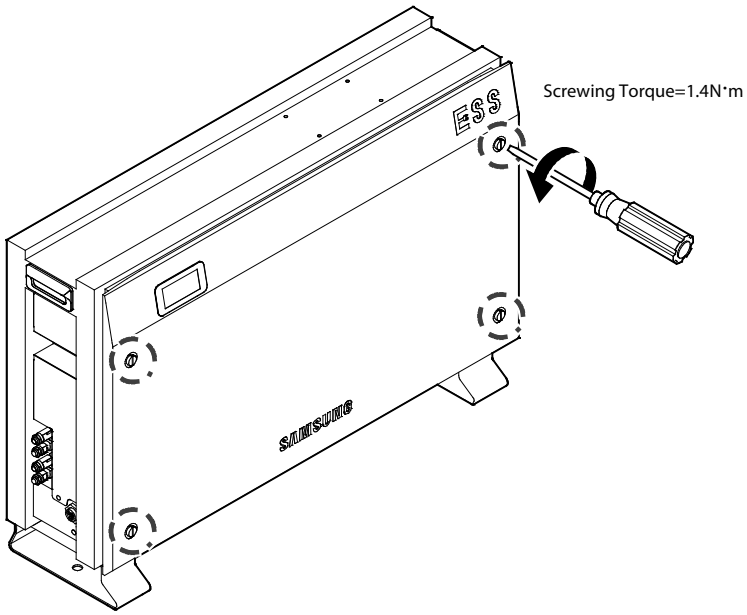


[Figure 5-14: Front Cover Assembly process 2]

3. As shown in the figure, use a tool such as a flat driver to fix the bolts into the four holes indicated in red circles.



[Figure 5-15: Front Cover Assembly process 3]



[Figure 5-16: Front Cover Assembly process 4]

5.7 A Method of Locking the Distribution Box (Board)

The distribution board performs the following functions when it is connected to the INVERTER, the PV and the Grid.

- AC Grid block function (external) AC circuit breaker

  : 230Vac, 32A, 10kA (short circuit current rating)

- DC block function; DC disconnect switch must be fitted.

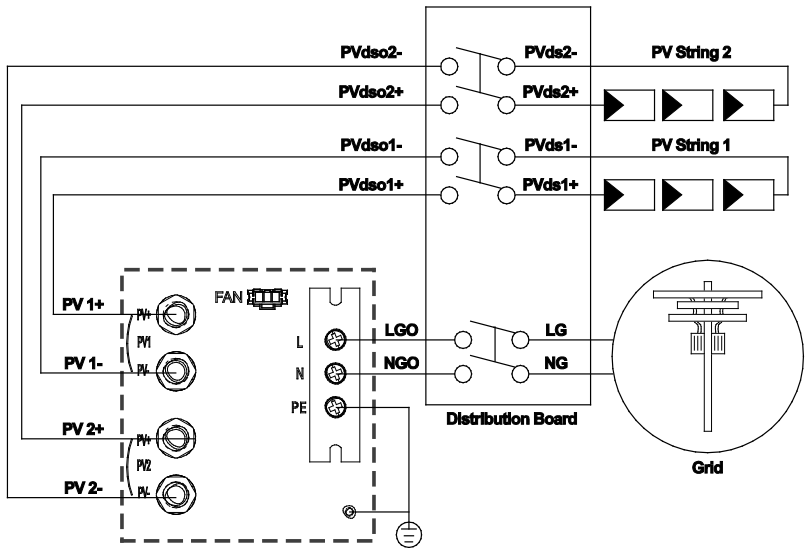
  PV String1 block function (external) DC disconnect switch

  PV String2 block function (external) DC disconnect switch

  : 650Vdc or more / 15A or more

- Residual current device (RCD): Leakage current measure and block

The [Figure 5-17] shows the connection diagram on the distribution board. The distribution box receives the DC input (the PV string 1 and the PV string 2) from the solar energy module. The power grid and the house load are connected to the AC power (L, N).



[Figure 5-17: Distribution box connection diagram]

	CAUTION
	The PV string 1 and the PV string 2 must be each connected to the distribution box terminal, as shown in the distribution board connection diagram. Make sure that the string numbers match correctly. For example, do not connect a PV string 1 to a PV string 2.

5.7.1 AC Circuit Breaker and DC Disconnect Switch

The circuit breaker populated on the distribution board varies depending on the installer. Follow the installation standards to install a circuit breaker satisfying the voltage, the current specification of the Grid and the PV. The cables presented in the [Table 5-5] are recommended for use.

	Standard	Short circuit current rating
AC circuit breaker	230Vac / 32A	10kA minimum
DC disconnect switch	650Vdc / 15A or more	-

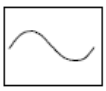
	Area	Insulation	Color code
Grid (L,N)	6mm^2	600V or more	Black
PE	6mm^2	600V or more	Green with yellow lines
PV (+), (-)	6mm^2	700V or more	Black

[Table 5-5: Circuit breaker, DC Disconnection Switch and power line specification]

As illustrated in the [Figure 5-17], the distribution box connection diagram, the connection between the All in One system and the distribution box is made to the terminals of the solar energy (PVdso1+,PVdso1-,PVdso2+, and PVdso2-) of PV1+, PV1-, PV2+, and PV2-.
On one hand, the main body terminals (PV1 +, PV1 -, PV2+, PV2-) and the distribution box terminals are connected in proper order. On the other hand, for the lines coming from the AC GRID, L and N leads are connected to the distribution board (LG, NG). The lines coming out from the LGO, PGO of the distribution board are be connected to the L and N terminals of the All in One System.

5.7.2 RCD (residual current device) Leakage Circuit Breaker

This product can cause a DC current in the external protective earthling conductor. Where a residual current-operated protective (RCD) or monitoring (RCM) device is used for protection in case of direct or indirect contact, either an RCD or RCM of Type A or Type AC is only available on the supply side of this product.

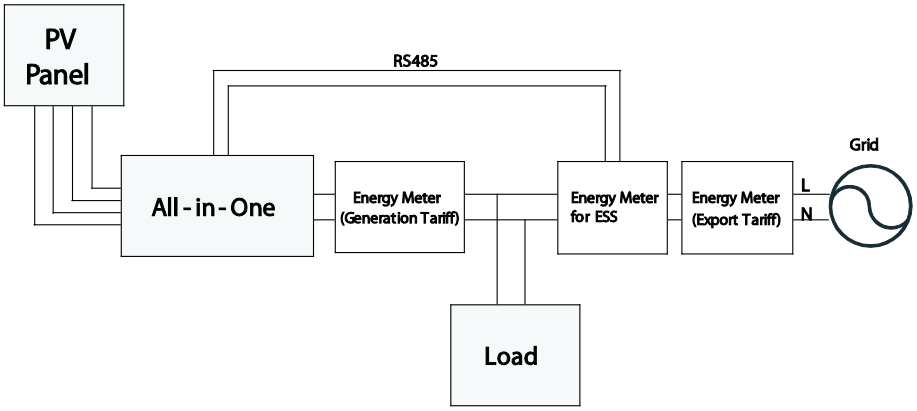
ITEM		Description
	Type AC	AC current sensitive
	Type A	AC current sensitive and pulse current sensitive

[Table 5-6: RCD Leakage circuit breaker description]

5.8 An Installation Method of Energy Meter Electrical Connection

The electrical installation method of the digital energy meter (energy meter) must comply with installation method provided by the digital energy meter manufacturer. However, the digital energy meter must be selected, as recommended by Samsung SDI in Chapter 6.3 on the following page.

The [Figure 5-18] shows the electrical cable connection and the communication lines of the digital energy meter. Depending on the product, there are a Uni-Direction meter and a Bi-Direction meter. For the uni-direction meter, two lines must be connected, with one line in the export direction and the other in the import direction. For the Bi-Direction meter, one line can be used. Refer to the [Figure 5-18] and the communication description in Chapter 6 to install the digital energy meter.



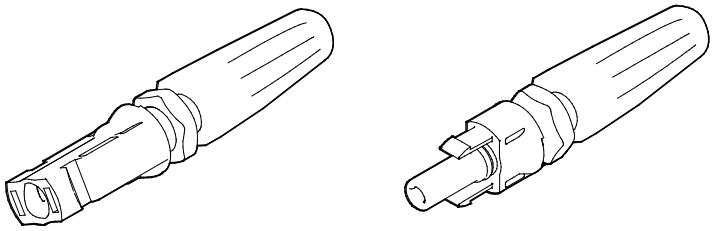
[Figure 5-18: Electric cable connection for energy meter installation]

The end system of the used lead wiring may be different with the energy meter chosen. Therefore, refer to the energy meter manual.

5.9 A Connecting Method of the DC Line from the PV

Refer to the [Figure 5-19] for the PV module connection. The lead wire coming from the PV module is connected to the distribution box. For the structure of the distribution box, refer to subsection 5.7. For the connection to the distribution box, connect each to the terminals of the solar energy of PV1+, PV1-, PV2+, and PV2-. On the other hand, connect the distribution box terminals with the main body terminals (PV1+, PV1-, PV2+, and PV2-) of the 3.6 kWh All In One in proper order. The lead wire thickness is presented shown in the following Table.

For the connectors (PV1+, PV1-, PV2+, and PV2-) between the distribution box and the 3.6 kWh All In One input, the following types of connectors are used (MC4 connector, PV-Stick Photovoltaic connector "PUSH IN "connection).



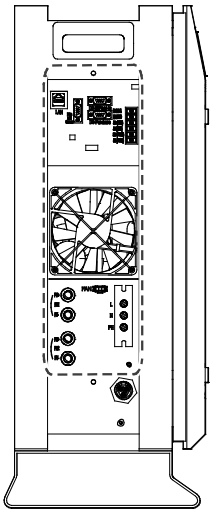
[Figure 5-19: PV connector (Female) and PV line (Male)]

The [Table 5-7] shows the lead wire standard for the PV. The thickness (6mm^2) of the lead wire is recommended for the 3.6 kWh All in One.

	Area	Insulation	Color code
PE	6mm^2	600V or more	Green with yellow lines
PV (+), (-)	6mm^2	700V or more	Black

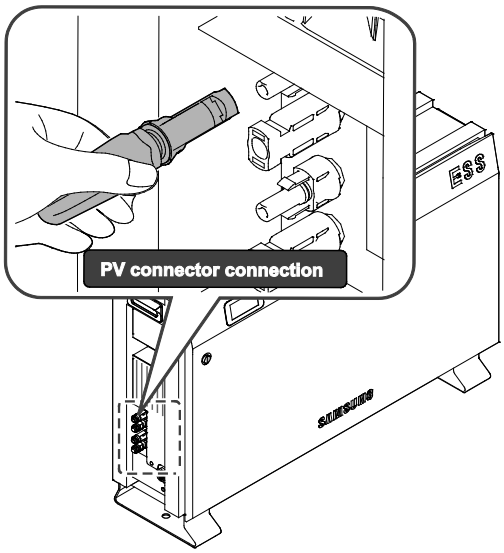
[Table 5-7: Wire Standard]

After opening the side cover, perform the PV and AC connection. (Refer to the contents below). Disassemble the screw to open the side cover.



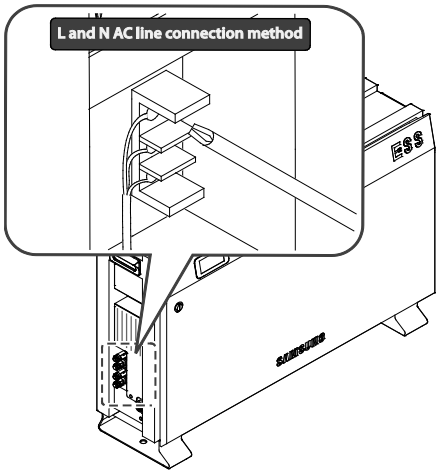
[Figure 5-20: Side cover opening]

The Male product is connected to the lead wire coming from the distribution box in the PV side, and the Female part is attached to the All in One system. The two products are properly docked when connected together. After opening the side cover, perform the PV and AC connection.



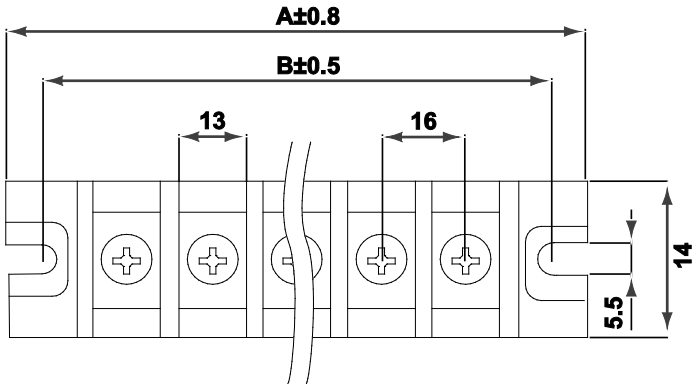
[Figure 5-21: PV connector connection (MC4 connector connection)]

In the All in One System, the AC power input/output ports are not plug type. They are designed to connect to external devices using screws.
When connecting the cable to the L and N sockets in the Terminal block, the ring terminal is attached to the end of the cable for connection to the main body terminal. The [Figure 5-22] shows the connection method of the AC part. Use the ring terminal (M6) for locking. Use a torque screwdriver of 2.4~3.0N·m to tighten the screws on L and N AC line.
We recommend the cable composed of two power cords and one PE cord and have insulation cover which contains all three cords as in the figure. Each cord shall be 6mm^2 and the diameter of the cable shall be approximately 18mm^2. Make sure that the PE cord is longer than other live cords of the cable so that the PE cord will not be affected by the pulling force. The PE terminal is connected from the inside of the product to the frame ground of the enclosure.



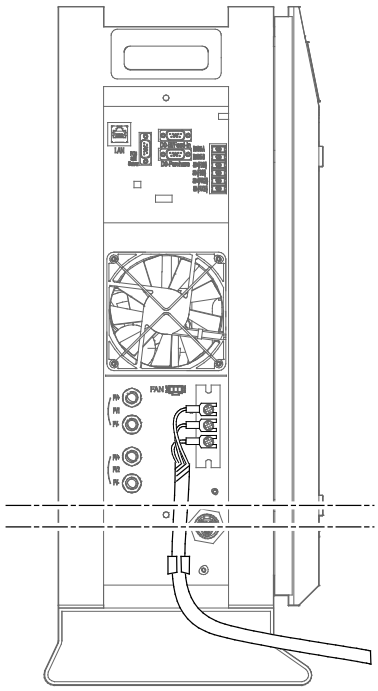
[Figure 5-22: L and N AC line connection method]

The [Figure 5-23] shows the structure of the terminal block.



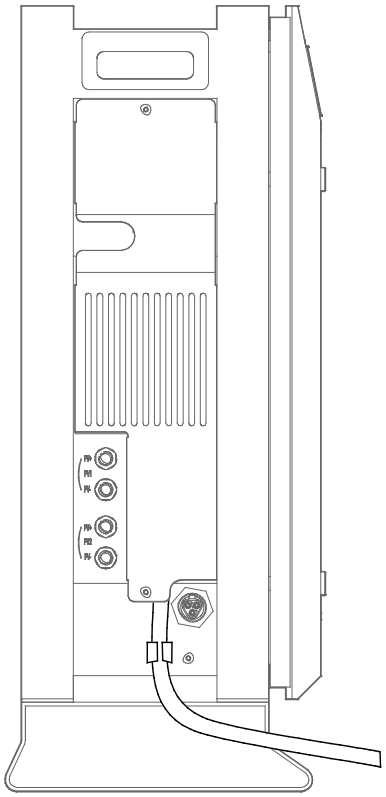
[Figure 5-23: Terminal Block]

After that, tie the cable to the mount using the cable tie B (larger one which is included as an accessory) to the tie mount. You should tight the tie such that there will not be any slip when you pull the cable with the force of 100N. And the end of outer cable surface should be within 10 mm below the end of protrusion.



[Figure 5-24: Power Cable connection to the terminal block]

Use the screw to close the side cover and conform to the torque value of 1.2~1.8 Nm.



[Figure 5-25: Side view after side cover assembly]

6. Communication Connection

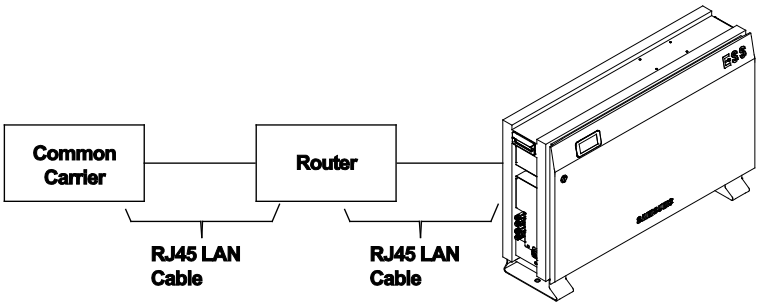
6.1 Internet Connection

6.1.1 Components

- Wired Router (not provided in the product package)
- RJ45 general LAN Cable (not provided in the product package)

6.1.2 Connection Block Diagram

LAN (Common carrier → Router) → ESS



[Figure 6-1: Internet Connection]

6.1.3 Connection Method

As shown in Subsection 6.4 on the communication terminal part, plug the RJ45 LAN Cable between the LAN terminal and the Router.

6.2 Energy Meter Connection

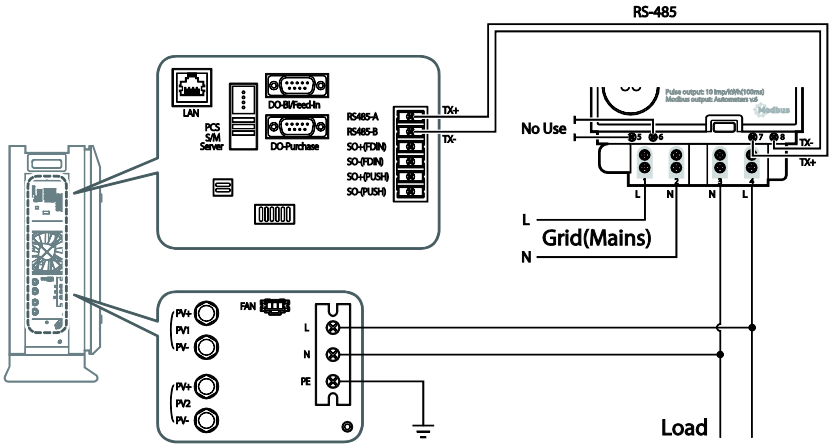
6.2.1 RS485 Interface

6.2.1.1 Components

RS485 Meter

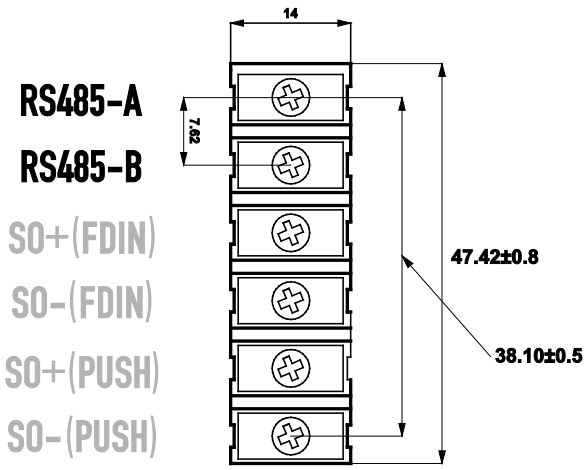
Twist paired RS485 Communication Cable

The total length of RS485 Cable is 100m or less



[Figure 6-2: Energy Meter Wiring & Setting (For C2000M)]

6.2.1.2 Connection terminal



[Figure 6-3: RS485 terminal block]

Use a torque screwdriver of 0.9~1.2N·m to tighten the screws on RS485-A and RS485-B.

6.3 Recommended Energy Meter List

No.	Company	Model	Interface	Direction
1	Autometer	C2000M	RS485	Bi-direction
2	CARLO GAVAZZI (*)	EM112-DIN.AV0.1.X.S1.X	RS485	Bi-direction

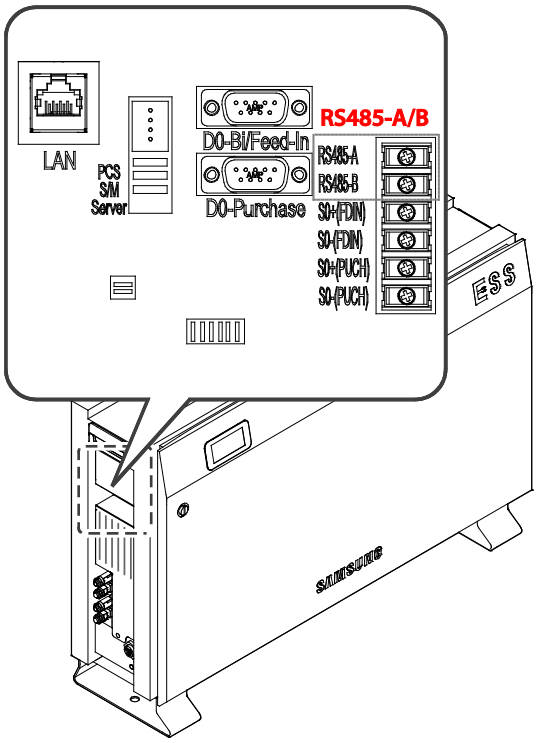
※(*): It is strongly recommend meter.

[Table 6-1: Recommended Meter List]

6.4 The Communication Terminal

Communication terminal

- Bi-directional Energy Meter: It must be connected with RS485-A, RS485-B connector.



[Figure 6-4: Communication terminal]

6.5 Homepage

Any customer who has purchased this device can use a web browser (https://myess.samsungsdi.com) or a smart phone to check its current operation status and receive various statistical information on operation in the house or remotely.

6.5.1 Service Terms

This service is provided only when the device is connected to the Internet, and specific services may require additional information only after approval from the customer.

6.5.2 Membership

To use this service, you must register for membership through our homepage. During membership registration, the member's information such as ID, password, name and the address are collected, and additional data may also be collected to provide statistical information upon customer's approval.

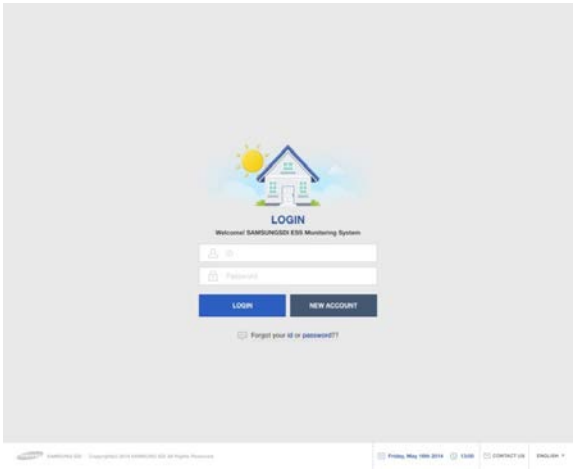
6.5.3 Membership Withdrawal

For a customer who does not want to use this service, membership withdrawal is available through the personal information modification menu on the homepage.

6.5.4 Log-In

Log in to the homepage through the ID and the password generated through membership registration. You can monitor the product online only when you are logged in.

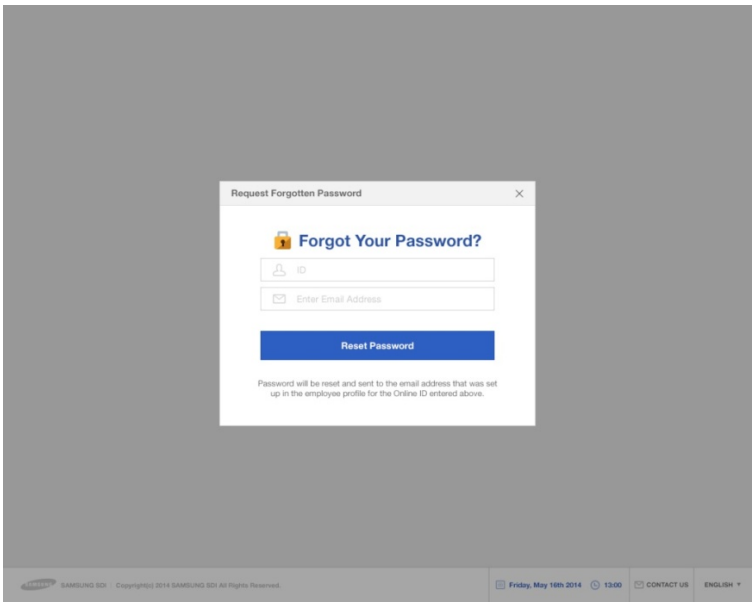
Also, if a log-in ID error or a password error occurs five consecutive times, access is blocked for 10 minutes for security reasons, and access is permitted after this waiting period of time.



[Figure 6-5: Log-in page]

6.5.5 Password Initialization

A customer who forgets the password during use can initialize the password by using the password initialization menu on the homepage. On the log-in page, select the "Forgot your id or password? "menu, and when the customer confirms the ID and the e-mail address created during membership registration, the initialized password is sent to the registered e-mail address.


Request Forgotten Password
Forgot Your Password?
ID
Enter Email Address
Reset Password
Password will be reset and sent to the email address that was set up in the employee profile for the Online ID entered above.
CONTACT US
ENGLISH

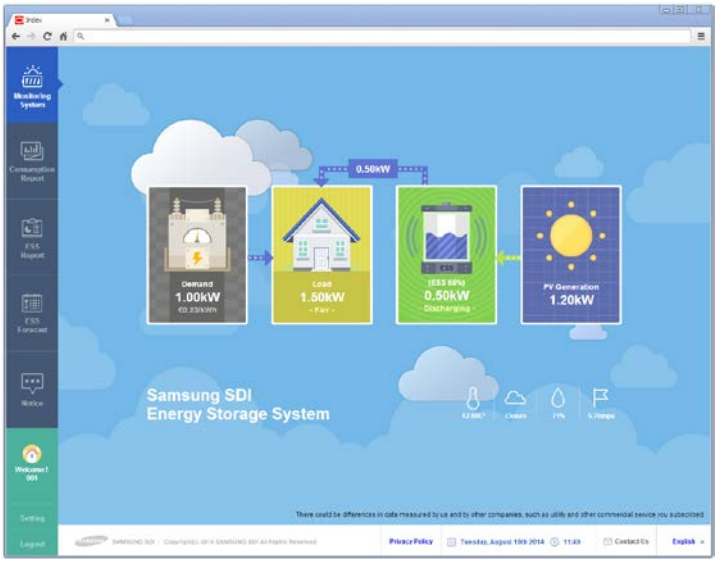
[Figure 6-6: Password initialization page]

6.5.6 Types of Service Offered

After completing log-in, normal service is available. This service currently provides such menu items as monitoring, consumption reports, ESS reports, ESS forecasts, and notices.

6.5.6.1 Monitoring

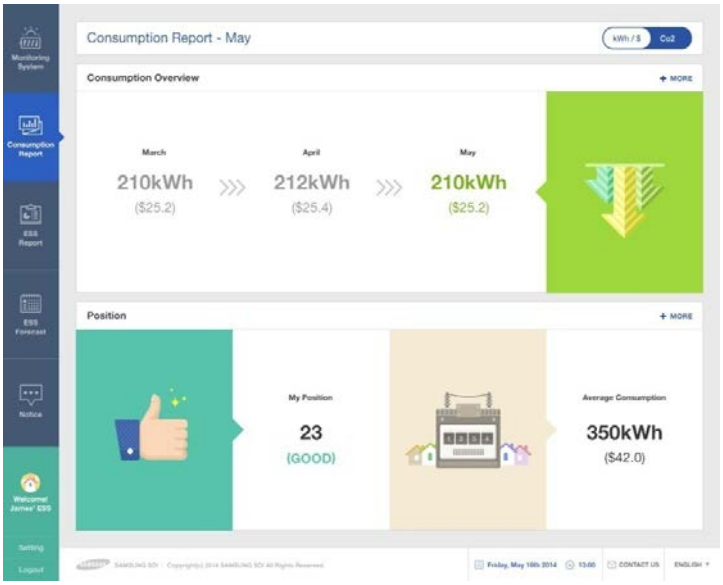
The operational status of the product is indicated. You can check the current status of operation, the customer's power consumption information, and power generation amount information in real-time. You can also check event codes generated during run time on the monitoring page. You can check the details of the event codes by clicking the exclamation marks which appear on the ESS icon. If the Internet is not available, the event codes cannot be checked.



[Figure 6-7: Monitoring page]

6.5.6.2 Consumption Report

The household power consumption information collected during energy meter linkage is provided. In particular, such information on as the household type, the size, and the number of family residents is collected according to the customer's approval. You can use these data to identify various types of statistics and comparative analysis data.



[Figure 6-8: Consumption report page]

6.5.6.3 ESS Report

On the ESS Report page, you can check various types of data generated through ESS operation. You can also use the ESS Report to check the amount of energy charged or discharged and other data comparisons with the solar energy production amount or the power sales amount.

6.5.6.4 ESS Forecast

In the ESS Forecast menu, the generation amount forecast information and the guide for optimized operation can be checked through the algorithm mounted on the product.

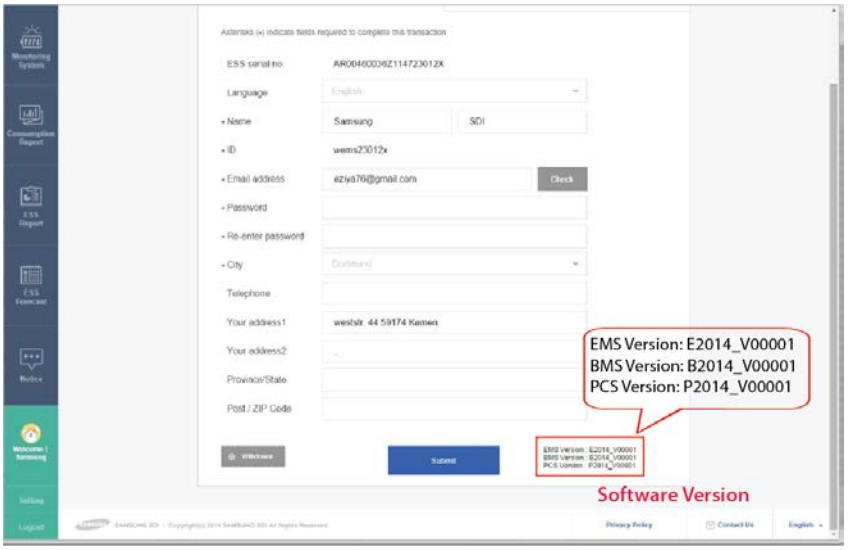
[Figure 6-9: Forecast page]

6.5.6.5 Notices

You can check the notice message whenever there is an update or any other change in the service.

6.5.6.6 Software Versions

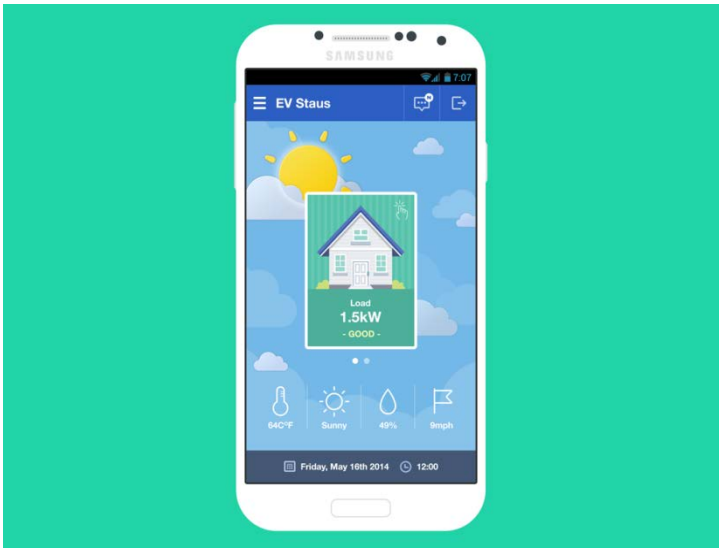
You can check the software version of the product on the monitoring page.



[Figure 6-10: Setting page]

6.5.7 Mobile Service

Customers who use Android or I-Phone can use a smart phone to easily check the product status anytime, anywhere. To use the mobile service, the customer must first register the membership through the webpage and use the ID and the password to log-in.



[Figure 6-11: Mobile service page]

7. Entering Initial Installation Information

You can use the following procedure to enter the initial installation information and to monitor the operational information of this system appropriately on server.

7.1 Information Input Administrator

You have to use a laptop or a smart phone to enter the installation information.

7.2 System Information input stage

- 1st Step : Direct Connection to PC -> Input Local Setting Value
- 2nd Step : Connection to Web Page -> Input Webpage Setting Value

7.3 PC Direct Connection and Local Setting Value

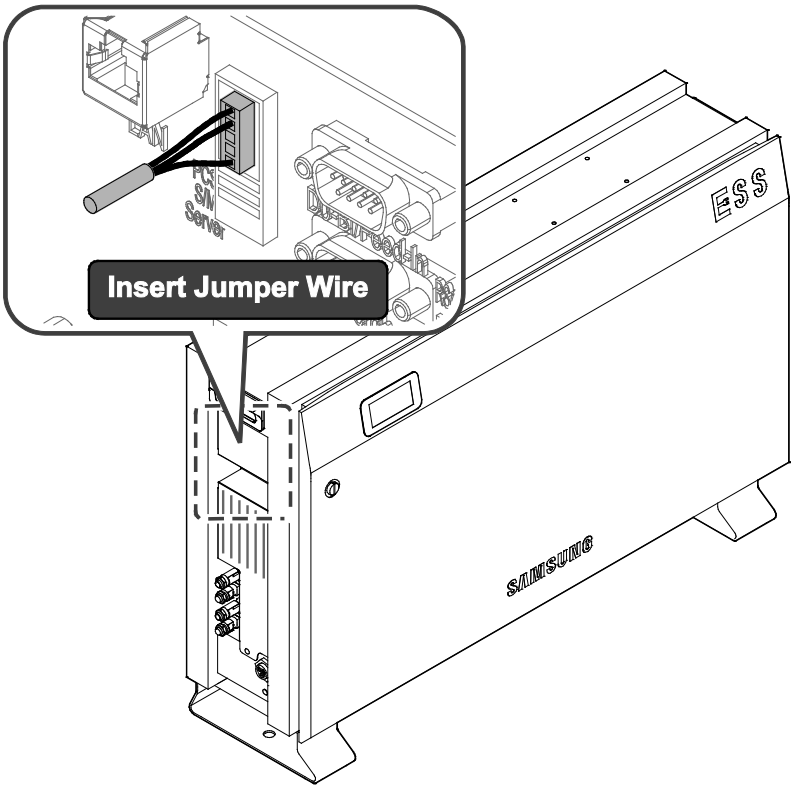
7.3.1 PC Direct Connection Flow

- System Off Status → Insert Jumper Wire, Connect PC LAN cable

  → System AC on → PC Direct Connection → Input Setting Value

  → System off → Remove Jumper Wire → Connect Internet LAN Cable

7.3.2 Inserting Jumper Wire



[Figure 7-1: Jumper]

7.3.3 LAN Cable Connection between PC and System

7.3.3.1 LAN Cable Type

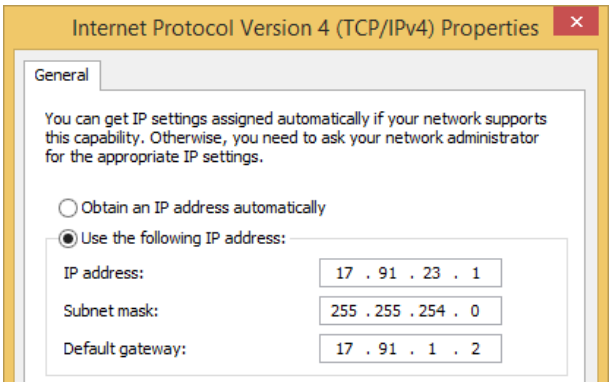
- UTP cable/category 5E
- 1:1 direct cable

7.3.4 SIM (System Install Manager) Connection

7.3.4.1 To enable direct communication between the computer and the All in One, change the TCP/IP settings on the computer as shown below:

- **Set on your laptop**
  [Control Panel → Network and Sharing Center → Change adapter settings → Local Area Connector → Properties → Internet Protocol Version 4 (TCP/Ipv4)]

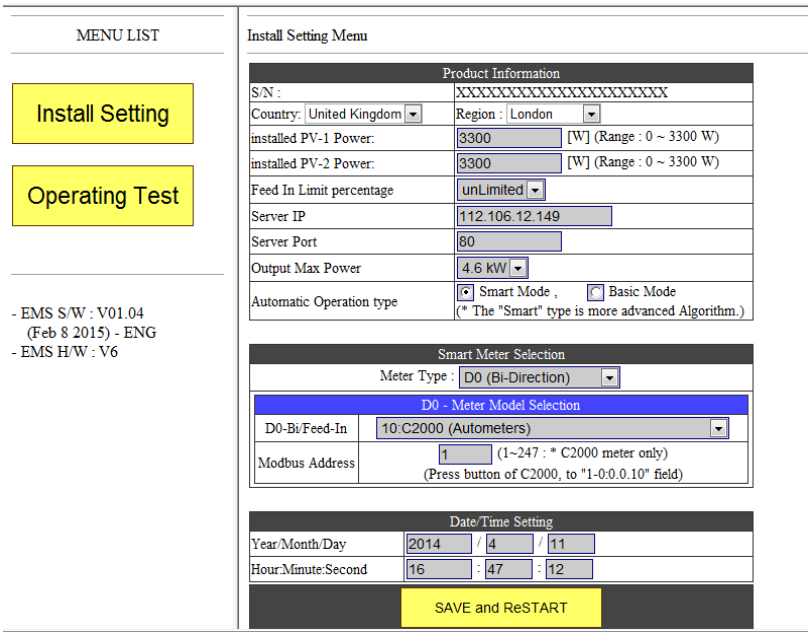
IP address: 17.91.23.xx
Subnet mask: 255.255.224.0
Default gateway: 17.91.1.2


Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 17 . 91 . 23 . 1
Subnet mask: 255 . 255 . 254 . 0
Default gateway: 17 . 91 . 1 . 2

7.3.4.2 Connection URL

- http://17.91.23.196:8000

7.3.4.3 Connection Screen


MENU LIST
Install Setting
Operating Test
- EMS S/W : V01.04 (Feb 8 2015) - ENG
- EMS H/W : V6
Install Setting Menu
Product Information
S/N : XXXXXXXXXXXXXXXXXXXX
Country: United Kingdom
Region : London
installed PV-1 Power: 3300 [W] (Range : 0 ~ 3300 W)
installed PV-2 Power: 3300 [W] (Range : 0 ~ 3300 W)
Feed In Limit percentage: unLimited
Server IP: 112.106.12.149
Server Port: 80
Output Max Power: 4.6 kW
Automatic Operation type: Smart Mode , Basic Mode
(* The "Smart" type is more advanced Algorithm.)
Smart Meter Selection
Meter Type : D0 (Bi-Direction)
D0 - Meter Model Selection
D0-Bi/Feed-In: 10:C2000 (Autometers)
Modbus Address: 1 (1~247 : * C2000 meter only)
(Press button of C2000, to "1-0:0.0.10" field)
Date/Time Setting
Year/Month/Day: 2014 / 4 / 11
Hour:Minute:Second: 16 : 47 : 12
SAVE and ReSTART

[Figure 7-2: Initial setup page]

7.3.5 Entering Setting Value

7.3.5.1 S/N

- Enter shipment value from the factory (a subsequent modification is not available.)

7.3.5.2 Region

- Select a city and enter the city name for installation on the menu.

7.3.5.3 PV Install Value

- Enter installation capacity of each PV string.

  Enter by typing by hand.

7.3.5.4 Sever IP & Port

- Enter as basic value.
- Perform any modification for relevant issues only.

7.3.5.5 Energy Meter Selection

Meter Type

RS485

7.3.5.6 Date/Time setting

Enter the current date and time

7.3.5.7 Save and Restart

Save onto the system after all the procedures above are completed.

7.3.5.8 Grid Feed in Limit Regulation Setting

For some countries that have a regulation for the grid feed in limit, the device allows the installer to set up a limit value. You can select the required limit value in the [Feed in Limit Percentage] on the set up screen. The selectable values is 0%, 60%, 70%, 80%, 90%, and unLimited. The term *unlimited* means that is that there is no grid feed-in limit.

7.3.5.9 Changing the Inverter's Output Setting

You can set maximum output value of Inverter.
It can be either 3.6 kW or 4.6 kW.

7.4 Web Page Connection

7.4.1 Web Page Connection

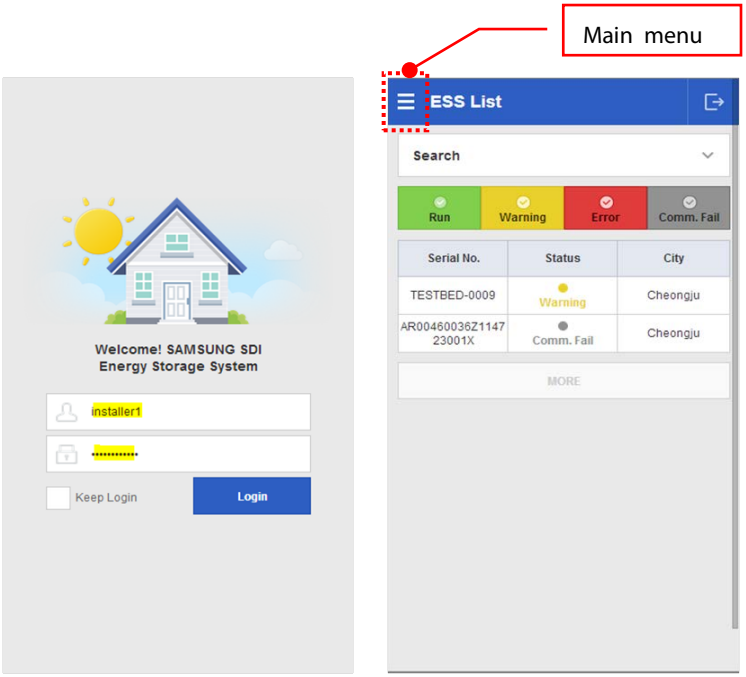
Open an Internet browser of your laptop or smart phone, then enter the designated address. Then the system information input page pops up.

Input URL: https://myess.samsungsdi.com/engineer/main.do or

https://112.106.12.149/engineer/main.do

7.4.2 Login & "ESS List "menu

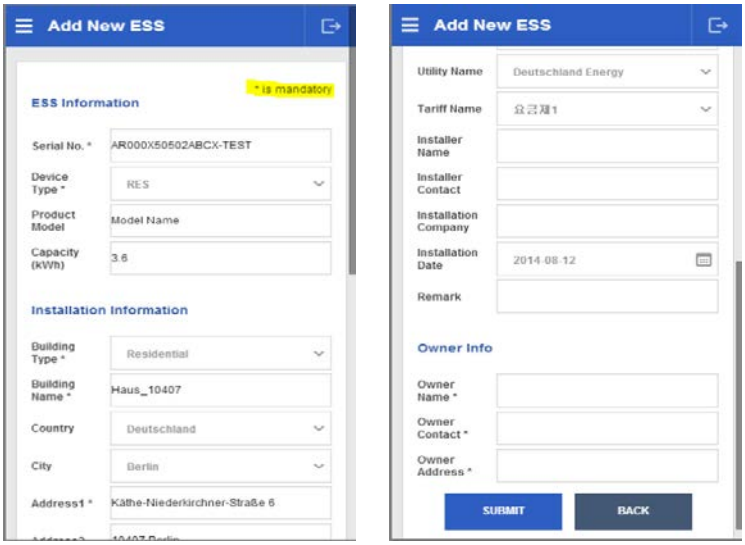
Input your ID and password for engineers to see the list of ESS.



[Figure 7-3: Engineer log in page]

7.4.3 Adding New ESS Information

Click the main menu and select "Add New ESS. "Enter the ESS information, installation information, and owner's information. The data input includes the ESS UID, service date, installation date, installer information, phone number, address, city information, national code. These information data may differ according to the product model and product version. Click the "Submit" button when all is completed. Then a success message appears.



[Figure 7-4: New ESS add page]

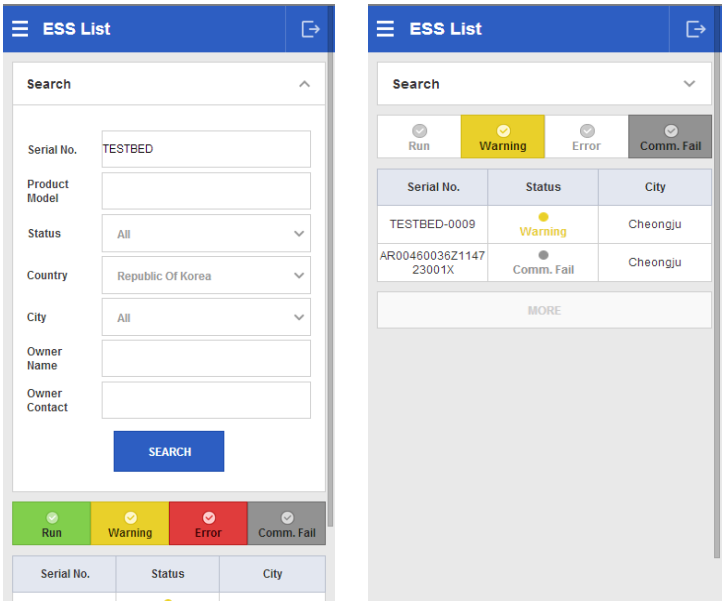
Information	Description
Serial No.	Enter the serial number of ESS
Device Type	Select a type of ESS, e. g., "AIO is RES."
Battery No.	Enter the serial number of battery
Product Model	Enter the model code of ESS, e. g., "AIO is ELSR362-00001."
Capacity	Enter battery capacity, e. g., "AIO is 3.6."
Building Type	Select a type of building
Building Name	Enter building's name e. g., "Jack's Home"
Country	Select the country
City	Select the city where ESS is located
Address1	Enter the address of location
Address2	Enter the address of location
Utility Name	Select the utility for the customer
Tariff Name	Select the tariff for the customer
Installer Name	Enter the installer's name or company name
Installer Contact	Enter the installer's contact information, including the company information
Installation Company	Enter the installer's company name
Installation Date	Select the installation date
Remark	Enter a something important to remark
Owner Name	Enter the owner's name
Owner Contact	Enter the owner's contact information

Information	Description
Owner Address	Enter the owner's address

[Table 7-1: Registration Item list]

7.4.4 Checking the Current Status of ESS

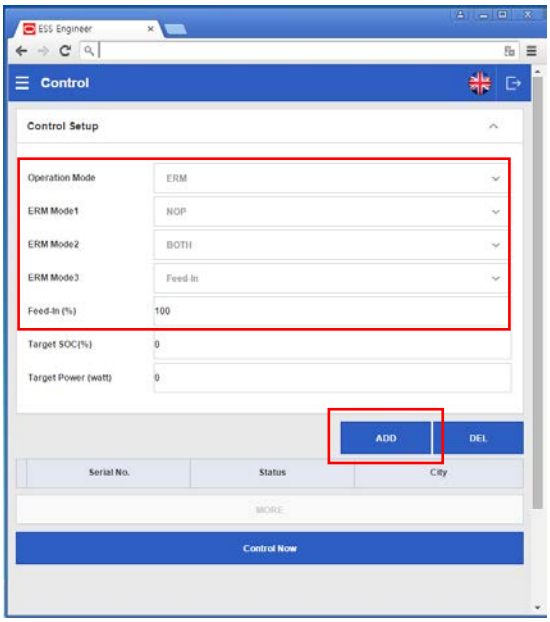
Click the main menu and select the "ESS List." Enter the "Search "menu. If you enter search keywords and click the "Search "button, the current status of ESS is displayed.



[Figure 7-5: ESS status page]

7.4.5 Changing Inverter's Feed-In Setting

Select "Control "on the menu, select "ERM "for the Operation Mode, and then select "NOP "for the ERM Mode 1, "BOTH "for the ERM Mode 2, and "Feed-in "for the ERM Mode 3. Enter your desired value in "Feed-in (%) "and click the "ADD "button to select the product you want to apply this change to.



[Figure 7-6: Inverter feed in limit setup page]

Add all the products you want to control, then click the "Control Now "button to start controlling them. You can check all the changes made to "ESS Information "(It may take about 5 minutes to update such changes to this item).

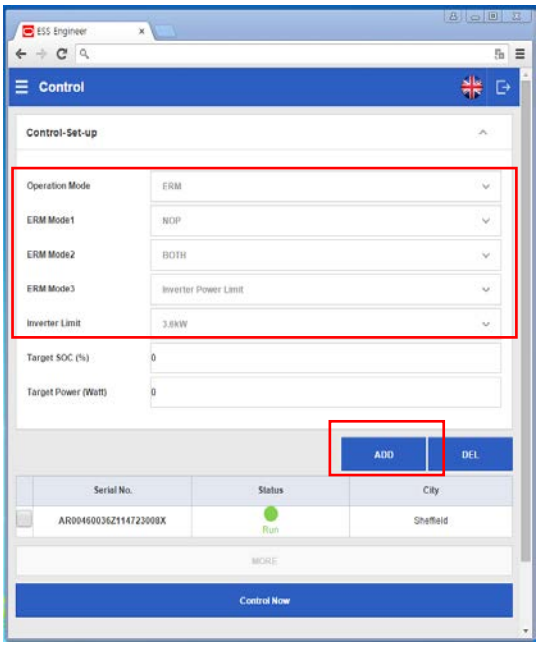
ESS Status

ESS Status	Run (2015-01-15 05:52)
IP Address	2.103.95.122
Battery Operation Status	Standby
PV Power	0 W
PCS Target Power (watt)	237 W
Capacity	3.6 kWh
Errors	
EMS Mode	EMS local Auto
PCS Mode1	
PCS Mode2	Both
Feed-In Limit	100

[Figure 7-7: ESS status detail information page]

7.4.6 Changing the Inverter's Output Setting

On the menu, select "Control "and "ERM "for the Operation Mode. Then, select "NOP "for the ERM Mode 1, "BOTH "for the ERM Mode2, and "Inverter Power Limit "for the ERM Mode 3. And then choose either "3.6 kW "or "4.6 kW "for Inverter Limit. Click the "ADD "button to select the product(s) that you want to apply this change to.



[Figure 7-8: ESS output setup page]

Add all the products you want to control, then click the "Control Now "button to start controlling them. You can check all the changes made to "ESS Information "(It may take about 5 minutes to update such changes to this item).

PCS Information

PCS Mode1	No Operation
PCS Mode2	Both
PCS Power (watt)	-0.2
PCS Target Power (watt)	237
Max Inverter Power (watt)	3600

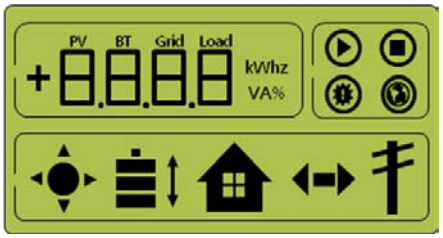
[Figure 7-9: PCS information page]

8. Operation Test

8.1 Starting the System

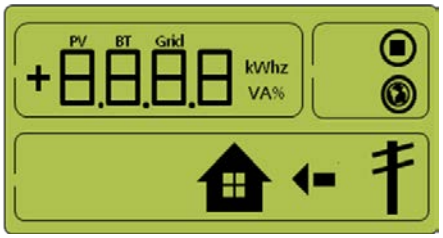
After completing the installation, turn on the AC circuit breaker and the DC disconnect switch installed in the distribution box. (See the Section 5.7)

Check the system check message on the front LCD screen.



[Figure 8-1: Initial indication screen on power on]

After finishing the system check, check the system, the PV, and the battery status.



[Figure 8-2: Standby state indication screen before the EMS command]

You will receive the command from the EMS to convert to operation mode.
For individual operation mode screen, refer to 8.3.

If there is an event message received, refer to 8.3.7.

8.2 Turning off the System

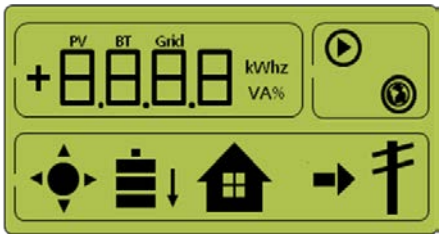
To turn-off the system, push down the manual AC circuit breaker and the DC disconnect switch in the distribution box.

8.3 Descriptions of Operation Mode

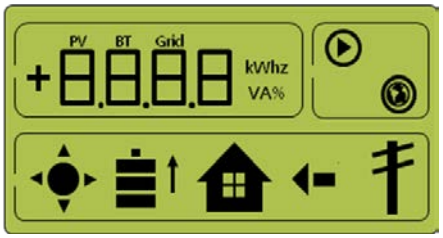
This system is composed of six modes: PV Auto, PV Only, Battery discharge, Standby, Maintenance (forced charge), and Stand-alone. The event check status should not be considered as any specific mode.

8.3.1 PV-Auto Mode

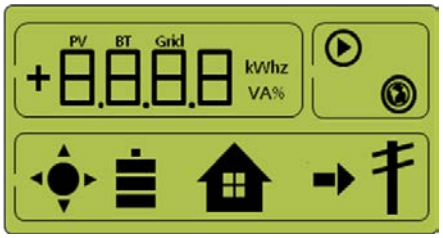
Both solar energy generation and battery charge-discharge are available. The solar-generated power is charged or discharged to the battery based on the EMS decision. A maximum of 4.6kW or less can be sent to the LOAD and the electric power system.



[Figure 8-3: PV generation, battery charge, Load use, sell remaining amount]



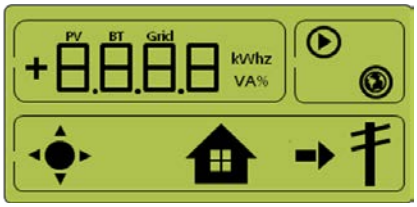
[Figure 8-4: PV generation, battery discharge, Load use, buy shortage amount]



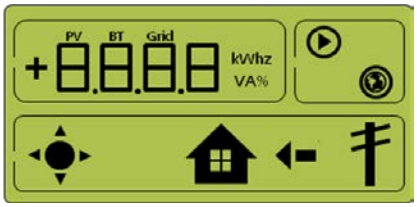
[Figure 8-5: PV generation, Battery standby, Load use, sell remaining amount]

8.3.2 PV-Only Mode

This mode enables the solar energy to be generated. However, the battery charge-discharge does not operate. A maximum of 4.6kW or less of solar energy generation power can be sent to the LOAD and the system based on the EMS decision.



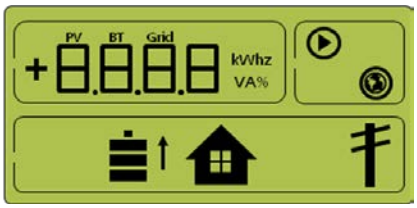
[Figure 8-6: PV generation, Sell remaining amount]



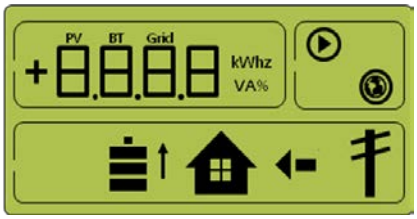
[Figure 8-7: PV generation, Buy shortage amount]

8.3.3 Battery-Discharge Mode

This mode permits of no solar energy generation. Battery discharge is only available on this mode. Based on the EMS decision, the battery discharge power can be sent maximum 2kW or less only to the LOAD.



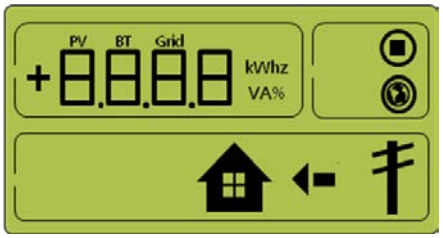
[Figure 8-8: Battery discharge, Load use]



[Figure 8-9: Battery discharge, Load use, Buy shortage amount]

8.3.4 Standby Mode

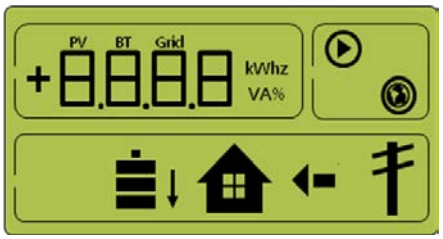
This is the standby mode before converting to operation mode (PV Auto, PV Only, Battery discharge mode). Conversion to the operation mode (PV Auto, PV Only, Battery discharge mode) is made by the EMS decision.



[Figure 8-10: Indication screen on Standby Mode]

8.3.5 Forced-Charge Mode (Maintenance mode)

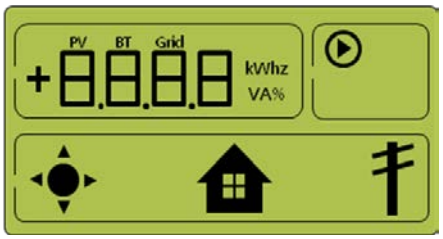
In this mode, solar energy generation is not used, but the power continuously flows from the electric power system to the battery.



[Figure 8-11: Indication screen on Forced charged Mode]

8.3.6 Stand-Alone Mode

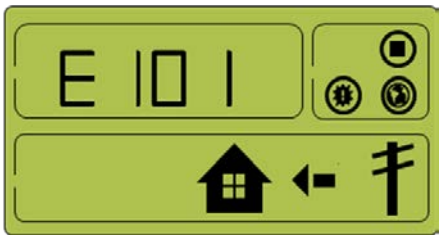
When the All In One is disconnected from the energy meter, or the power conversion system is disconnected from the energy management system (EMS), the All In One system enters into the Stand-Alone Mode. The system operates in a PV- only mode.



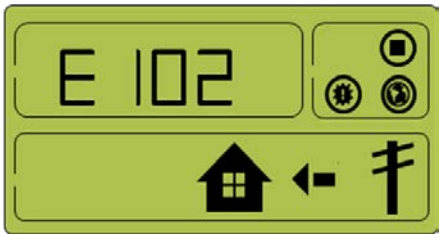
[Figure 8-12: Indication screen on stand-alone mode]

8.3.7 Event Check Mode

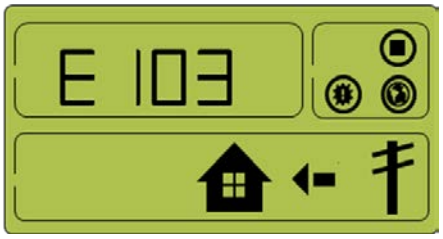
This mode stops solar energy generation and put it in standby mode as an event occurs.



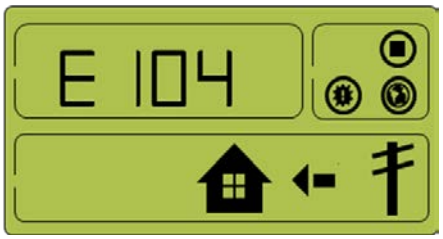
[Figure 8-13: Event occurrence, Grid RMS over current protection]



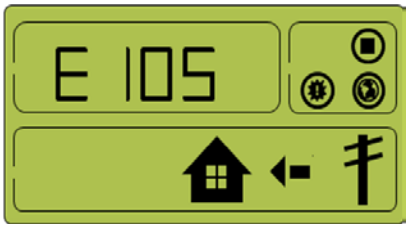
[Figure 8-14: Event occurrence, DC link over voltage protection]



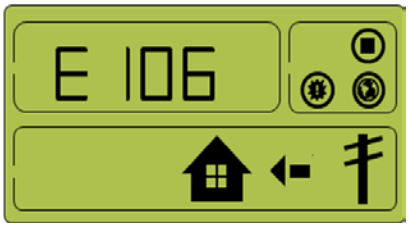
[Figure 8-15: Event occurrence, PV string1 reverse connection protection]



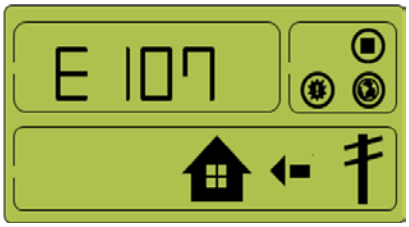
[Figure 8-16: Event occurrence, PV string2 reverse connection protection]



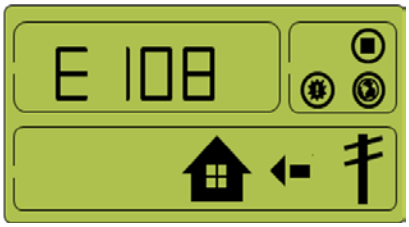
[Figure 8-17: Event occurrence, PV string1 over voltage protection]



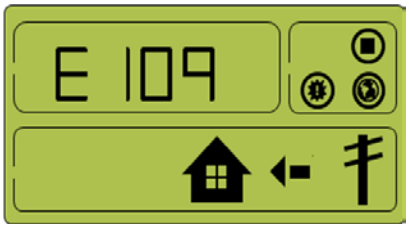
[Figure 8-18: Event occurrence, PV string1 over current protection]



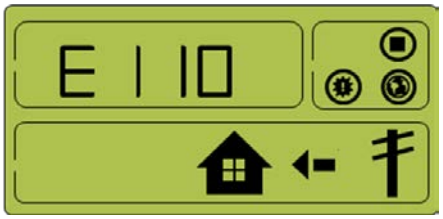
[Figure 8-19: Event occurrence, PV string2 over voltage protection]



[Figure 8-20: Event occurrence, PV string2 over current protection]

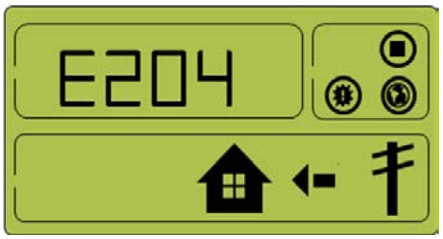


[Figure 8-21: Event occurrence, Battery over voltage protection]

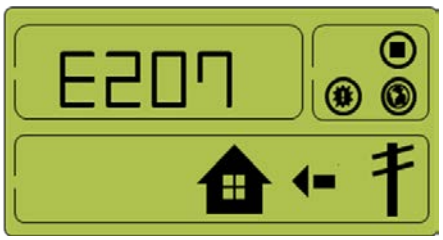


[Figure 8-22: Event occurrence, Battery over current protection]

[Figure 8-23: Event occurrence, On sequence Inverter DC link event]



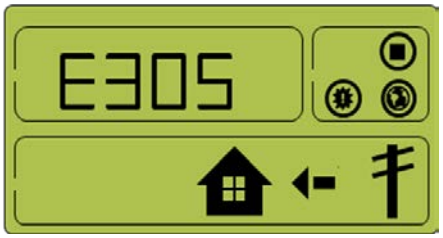
[Figure 8-24: Event occurrence, On sequence Battery V/I event]



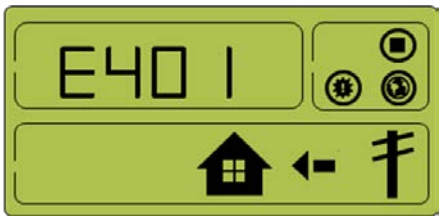
[Figure 8-25: Event occurrence, Normal Inverter DC link event]

[Figure 8-26: Event occurrence, Normal Battery V/I & BDC DC link event]

[Figure 8-27: Event occurrence, On sequence Inverter DC link event]



[Figure 8-28: Event occurrence, Normal Inverter DC link & PV I event]



[Figure 8-29: Event occurrence, Temperature protection]

[Figure 8-30: Event occurrence, Over Current TZ Fault]

[Figure 8-31: Events occurrence, temperature sensor connection error]

[Figure 8-32: Event occurrence, PV mis-wiring]

[Figure 8-33: Event occurrence, SPI communication event]

[Figure 8-34: Event occurrence, Single fault event]

[Figure 8-35: Event occurrence, Continuously 3 times Inverter fault]

8.3.8 Application Download Mode

[Figure 8-36: Indication screen on Application Download Mode]

9. Problem Confirmation

Checking event codes is available on the website (https://myess.samsungsdi.com).
If the Internet is not available, the event codes cannot be checked.

9.1 General Events

The general events contain warnings and protection.

The warning level events does not stop the generating process. A displayed warning message automatically disappears as soon as the issue is resolved.

When protection level events occur, the product stop the generating process. The process may automatically resume as long as the issue is resolved.

9.1.1 INVERTER General Events (Warnings)

Type	Code	Description	Measures
WARNING	E001	GRID UNDER VOLTAGE	When the system voltage drops below standard level. This is the overall voltage-current warning message, with no special change in the sequence. The warning message disappears on reversion to the normal state.
	E002	GRID OVER VOLTAGE	When the system voltage rises above standard level. This is the overall voltage-current warning message, with no special change in the sequence. The warning message disappears on reversion to the normal state.
	E003	BATT UNDER VOLTAGE	When the battery energy voltage drops below standard level. This is the overall voltage-current warning message, with no special change in the sequence. The warning message disappears on reversion to the normal state.
	E004	BATT OVER VOLTAGE	When the battery energy voltage drops above standard level. This is the overall voltage-current warning message, with no special change in the sequence. The warning message disappears on reversion to the normal state.
	E005	FAN WARNING	When the Fan operation is abnormal. This is the overall Fan warning message, with no special change in the sequence. The warning message disappears on

Type	Code	Description	Measures
			reversion to the normal state.
	E006	BATT CONNECTION WARNING	When the battery connection is abnormal. This is the connection warning message, with no special change in the sequence. The warning message disappears on reversion to the normal state.

[Table 9-1: Inverter general events warning list]

9.1.2 INVERTER General Events (Protection)

Type	Code	Description	Measures
PROTECTION	E101	GRID RMS OVER CURRENT PROTECTION	The product stops the generating process because a significant PROTECTION event has occurred. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
	E102	DC LINK OVER VOLTAGE PROTECTION	The product stops the generating process because a significant PROTECTION event has occurred. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
	E103	PV STRING1 REVERSE CONNECTION PROTECTION	The product stops the generating process because a significant PROTECTION event has occurred. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
	E104	PV STRING2 REVERSE CONNECTION PROTECTION	The product stops the generating process because a significant PROTECTION event has occurred. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant

Type	Code	Description	Measures
			event.
	E105	PV STRING1 OVER VOLTAGE PROTECTION	The product stops the generating process because a significant PROTECTION event has occurred. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
	E106	PV STRING1 OVER CURRENT PROTECTION	The product stops the generating process because a significant PROTECTION event has occurred. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
	E107	PV STRING2 OVER VOLTAGE PROTECTION	The product stops the generating process because a significant PROTECTION event has occurred. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
	E108	PV STRING2 OVER CURRENT PROTECTION	The product stops the generating process because a significant PROTECTION event has occurred. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
	E109	BATT OVER VOLTAGE PROTECTION	The product stops the generating process because a significant PROTECTION event has occurred. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
	E110	BATT OVER	The product stops the generating process

Type	Code	Description	Measures
		CURRENT PROTECTION	because a significant PROTECTION event has occurred. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.

[Table 9-2: Inverter protection list]

9.1.3 Battery Discharge General Events

Type	Code	Description	Measures
PROTECTION	E201	ON SEQUENCE GRID OFF	While in progress, battery discharged/charged operation is terminated through the protection function. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E202	ON SEQUENCE BATT STATUS EVENT	While in progress, battery discharged/charged operation is terminated through the protection function. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E203	ON SEQUENCE INV DC LINK EVENT	While in progress, battery discharged/charged operation is terminated through the protection function. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E204	ON SEQUENCE BATT V & BATT I EVENT	While in progress, battery discharged/charged operation is terminated through the protection function. Wait until the event message disappears. After the event message is removed, it automatically returns to normal.

Type	Code	Description	Measures
			If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E0205	NORMAL GRID OFF	While in progress, battery discharged/charged operation is terminated through the protection function. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E206	NORMAL BATT STATUS EVENT	While in progress, battery discharged/charged operation is terminated through the protection function. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E207	NORMAL INV DC LINK EVENT	While in progress, battery discharged/charged operation is terminated through the protection function. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E208	NORMAL BATT V & BATT I & BDC DC LINK EVENT	While in progress, battery discharged/charged operation is terminated through the protection function. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.

[Table 9-3: Battery operation general events list

9.1.4 PV General Events (Protection)

Type	Code	Description	Measures
PROTECTION	E301	ON SEQUENCE GRID OFF	PV generation mode is stopped by the protection event. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E302	ON SEQUENCE INV DC LINK EVENT	PV generation mode is stopped by the protection event. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E303	ON SEQUENCE PV V EVENT	PV generation mode is stopped by the protection event. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E304	NORMAL GRID OFF	PV generation mode is stopped by the protection event. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E305	NORMAL INV DC LINK & PV I EVENT	PV generation mode is stopped by the protection event. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E306	NORMAL PV V EVENT	PV generation mode is stopped by the protection event. Wait until the event message disappears. After the event message is removed, it

Type	Code	Description	Measures
			automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.

[Table 9-4: PV general events protection list]

9.1.5 System General Events (Protection)

Type	Code	Description	Measures
PROTECTION	E401	TEMPERATURE Protection	When the switch temperature is high. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E402	OVER CURRENT TZ FAULT	Occurs on INVERTER hardware protection. Wait until the event message disappears. After the event message is removed, it automatically returns to normal. If it is not removed until the time limit is reached, it is converted to a significant event.
PROTECTION	E403	TEMPERATURE SENSOR	When the temperature sensor connection is abnormal. Wait until the event message disappears. After the event message is removed, it automatically returns to normal.
PROTECTION	E404	PV MIS-WIRING	When the PV mis-wiring states is abnormal. Wait until the event message disappears. After the event message is removed, it automatically returns to normal.

[Table 9-5: System general events protection list]

9.1.6 BMS General Events

Type	Code	Description	Measures
WARNING	E501	OVER VOLTAGE PROTECTION-CELL	When the maximum cell voltage is above Warning level. Automatically returns to normal when the maximum cell voltage goes below the limit value.
PROTECTION	E502	OVER VOLTAGE PROTECTION-CELL	When the maximum cell voltage is above Protection level, thus terminating the system. Automatically returns to normal when the maximum cell voltage goes below the limit value.
WARNING	E503	UNDER VOLTAGE PROTECTION-CELL	When the minimum cell voltage is below Warning level. Automatically returns to normal when the minimum cell voltage goes above the limit value.
PROTECTION	E504	UNDER VOLTAGE PROTECTION-CELL	When the minimum cell voltage is below Protection level, thus terminating the system. Automatically returns to normal when the minimum cell voltage goes above the limit value.
WARNING	E505	OVER TEMPERATURE PROTECTION-CELL	When the maximum cell temperature is above Warning level. Automatically returns to normal when the maximum cell temperature goes below the limit value.
PROTECTION	E506	OVER TEMPERATURE PROTECTION-CELL	When the maximum cell temperature is above Protection level, thus terminating the system. Automatically returns to normal when the maximum cell temperature goes below the limit value.
WARNING	E507	UNDER TEMPERATURE PROTECTION-CELL	When the minimum cell temperature is below Warning level. Automatically returns to normal when the minimum cell temperature goes above the limit value.
PROTECTION	E508	UNDER TEMPERATURE PROTECTION-CELL	When the minimum cell temperature is below Protection level, thus terminating the system. Automatically returns to normal when the minimum cell temperature goes above the limit value.

Type	Code	Description	Measures
WARNING	E509	CELL VOLTAGE IMBALANCE PROTECTION	When the imbalance of the Cell voltage is above the limit value. Returns to normal when the imbalance of the Cell voltage is below the limit value.
PROTECTION	E510	CELL VOLTAGE IMBALANCE PROTECTION	When the imbalance of the Cell voltage is above the limit value. Returns to normal when the imbalance of the Cell voltage is below the limit value.
WARNING	E511	AFE INITIALIZATION	AFE initialization failure Restored to normal mode on AFE initialization success
PROTECTION	E512	AFE INITIALIZATION	AFE communication failure
WARNING	E513	CELL TEMPERATURE SENSOR 1EA	Occurs above the standard battery cell temperature.
PROTECTION	E514	CELL TEMPERATURE SENSOR 2EA	Occurs above the standard battery cell temperature.

[Table 9-6: BMS general events list]

9.1.7 EMS/Communication Events

Type	Code	Description	Measures
WARNING	E601	INVERTER COMMUNICATION EVENT	Turn off and restart the system. Reconnect the communication line between the EMS board and the DSP board.
WARNING	E602	ETHERNET EVENT	Disconnect and reconnect the LAN. Turn off and restart the Router. Make sure that the DHCP server function of Router is activated. Turn off and restart the system.
WARNING	E603	ENERGY METER EVENT	Make sure that the Meter device is properly selected. Disconnect and reconnect the D0 cable. Turn off and restart the system.
WARNING	C128	Ethernet Error	Make sure that the Ethernet communication port and wire connected properly.

[Table 9-7: EMS/communication events list]

9.1.8 Single Fault Events

Type	Code	Description	Measures
WARNING	E701	GRID UNDER VOLTAGE FAULT	The operation mode is terminated when a power system event occurs. Restart 1 minute after the electric power system event is settled.
	E702	GRID OVER VOLTAGE FAULT	The operation mode is terminated when a power system event occurs. Restart 1 minute after the electric power system event is settled.
	E703	GRID UNDER FREQUENCY FAULT	The operation mode is terminated when a power system event occurs. Restart 1 minute after the electric power system event is settled.
	E704	GRID OVER FREQUENCY FAULT	The operation mode is terminated when a power system event occurs. Restart 1 minute after the electric power system event is settled.
	E705	GRID TEN MINUTE AVERAGE FAULT	The operation mode is terminated when a power system event occurs. Restart 1 minute after the electric power system event is settled.
	E706	RCMU (Residual Current Monitoring Unit) FAULT	Turn off system power when the leakage current level is above standard level. Check the leakage current level, then restart or turn off to get back to the below standard level.
	E708	PV INSULATION FAULT	OFF Turn off system power if PV INSULATION RESISTANCE is at the standard level. Restart after 3 minutes.
	E709	ANTI ISLANDING FAULT	If the electric power system blacks out, it automatically detects the state and turns off the All in One. Restart after 3 minutes.
	E710	FUNCTIONAL SAFETY FAULT	When the two MCU (Micro Controller Unit) measuring values are mismatched. Restart after 3 minutes if no problem is found.

[Table 9-8: Single fault events list]

9.2 Significant Events

If a significant event is notified, the system is set to stop operation. If that is the case, contact your installer to restore the system to normal operation.

Type	Code	Description	Measures
Significant	E901	SPI COMMUNICATION EVENT	Occurs on internal non-communication between the INVERTER. Contact the installer immediately.
	E902	CAN (Controller Area Network) COMMUNICATION EVENT	Occurs on non-communication with the EMS. When in operation, the All In One System is converted to the Stand Alone mode. Contact the installer immediately.
	E903	SINGLE FAULT EVENT	The protection device against hazards has a defect or a fault that can cause a hazard has occurred. Contact the installer immediately. Contact the installer immediately.
	E904	CONTINUOUSLY 3 TIMES INVERTER FAULT	When INVERTER FAULT occurs three consecutive times, INVERTER HARD FAIL is considered to be occurred to stop the operation. Contact the installer immediately.
	E905	PV CROSS CONNECTION Permanent Fail	PV mis-wiring, for example (P1+/P2-) or (P2+/P1-). Contact the installer immediately.
	E906	Cell Over Voltage Permanent Fail	When exceeding Cell Max voltage. Contact the installer immediately.
	E907	Cell Under Voltage Permanent Fail	When an abnormal decrease in Cell Min voltage is reported. Contact the installer immediately.

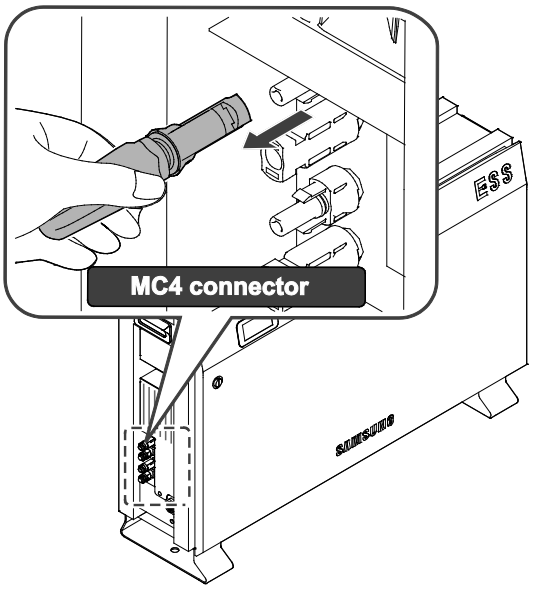
[Table 9-9: Significant events list]

10.Maintenance

10.1 Cleaning the Fan and the Cover

	NOTICE
	Qualified Person Only!

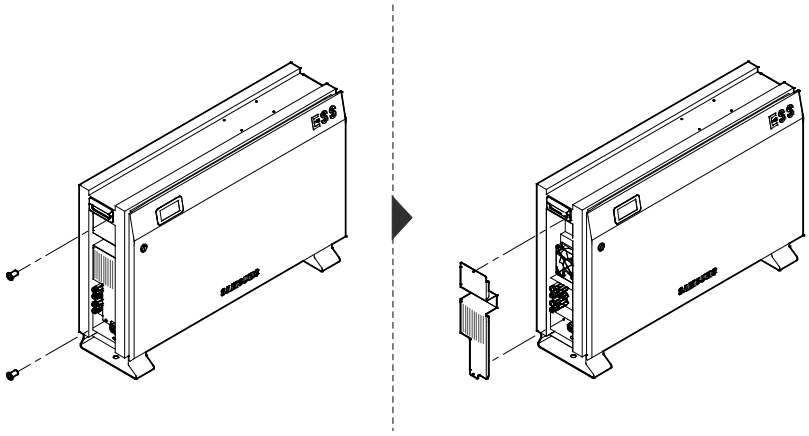
Refer to the following procedures and check the fan when error code E005 is shown. If the fan is covered with dirty particles, clean the fan as guided in this chapter. Turn off the AC circuit breaker and the DC disconnect switch in the distribution box, then separate the Photovoltaic MC4 connector from the connector located on the side of the 3.6 kWh All in One.



[Figure 10-1: PV MC4 connector]

Removal of the Photovoltaic MC4 Connector

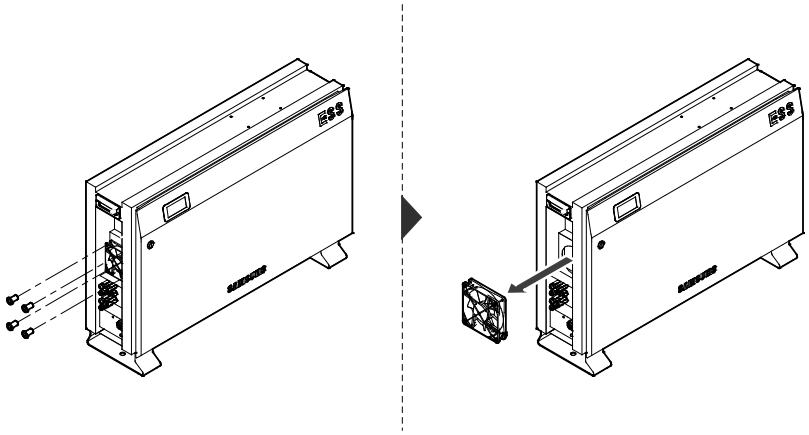
Remove the side cover. Make sure not to remove the front case cover.



[Figure 10-2: Side cover removal]

When the side cover is removed, clean the fan by using a smooth brush, paint brush, or wet cloth.

Remove the fan connector.



[Figure 10-3: Fan removal]

Clean the fan with a smooth brush or a wet cloth.

	NOTICE
	Using compressed air may damage the fan. When cleaning the fan, do not use compressed air. It may damage the fan.

When the fan is cleaned, assemble all the components in the in reverse order.

10.2 Checking and Exchanging Various Components

NOTICE

Qualified Person Only!

10.2.1 Fuse Check

Check the fuse when the device fails to work with significant error (E9XX).

Do not perform Fuse Check when the device is working.

Check the fuse after turning off the DC disconnect switch and the AC circuit breaker.

Measure both ends of the Inverter PBA (SJ92-01425A) F3, BDC PBA (SJ92-01426A) JF1 to check the resistance value.

If the resistance value is open state (Mega ohms or Infinite value), perform PBA exchange.

10.2.2 Input / Output Terminal Check

Check the input / output terminal when the device fails to work with significant errors (E9XX).

Check the input / output terminal after turning off the AC circuit breaker and DC disconnect switch.

Do not perform the check when the device is working.

Measure the input / output terminal with a multi-meter.

PV1 input (SJ92-01426A): CN13, CN14

PV2 input (SJ92-01427A): CN13, CN14

Battery input: CN17, CN27

AC output: CN1, CN4

If the resistance value is in a short state (close to 0), perform PBA exchange.

10.2.3 DC Link Check

Check the DC Link when the device fails to work with E102.

Check the DC Link after turning off the AC circuit breaker and DC disconnect switch.

Measure both ends of the DC link PBA (SJ92-01428A) CN1, CN2 with a multi-meter to check the resistance value.

If the resistance value is in a short state, perform PBA exchange.

10.2.4 FAN Operation Check

Check FAN operation when the device fails to work with E005.

Check the FAN operation as frequently as possible. Failure to do so may cause fatal damage to the device.

Perform PV Auto Mode to check whether both fans are working properly.

If the fans are not working properly, contact the installer.

10.3 Battery Maintenance

CAUTION

All work or service on the ESS and electrical connections must be supervised by personnel knowledgeable about batteries and the required precautions.

When replacing battery trays, replace old ones with the same type and number of batteries or battery packs (Check the type label or serial numbers/model numbers on battery trays).

40-minute standby period of time to complete discharging in the system before testing electrical parts inside the system!

Do not dispose of batteries in a fire. The batteries may explode.

Do not open or damage batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

A battery can present a risk of electrical shock and high short-circuit current. The following precautions should be observed when handling batteries.

Remove watches, rings, or other metallic objects.

Use tools with insulated handles.

Wear rubber gloves, eye protection glasses and boots when working with the battery systems.

Do not lay tools or metal parts on top of batteries.

Disconnect charging source prior to connecting or disconnecting battery terminals.

Determine if the battery is inadvertently grounded. If that is the case, separate battery from ground Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).

10.3.1 Checking Battery Problem

When you check the event message (as noted in Chapter 9), check whether it is a significant event that informs the battery system (Chapter 9.2: significant event E901~E910).

If it is a significant event, contact the installer or the maintenance personnel.

If it is a significant event message related to the failure, exchange the battery. However, battery exchange is permitted only to the qualified personnel.

The battery exchange procedure is as described in Chapter 10.3.2.

10.3.2 Battery Exchange Procedure

Separate the e electrical / communication connection line as guided below before the battery exchange.

For electrical connection of the main body, turn off the AC circuit breaker and the DC disconnect switch in the distribution box to remove the power.

For the MC4 connector connected to the Photovoltaic source, separate the male terminal from the female terminal.

Remove the AC cable connected to the terminal block in the AC line.

Remove the LAN communication cable.

To complete discharging in the main system, wait for 40 minutes. Remove the front case cover of the enclosure as described in Chapter 5.

Separate the battery electric connection connector (BATT-A: Connector on the BDC side, BATT-B: Connector on the battery side).

Separate the four signal lines which connect the battery to the Tray BMS.

Lay the main body down to ensure that the tray knob is visible. Work with at least two persons (Weight over 95 kg).

Unfasten the screw on the battery tray to remove it from the main body.

Lift the battery tray to separate it from the main body.

Place the main body and the battery tray on the packing box. This process is the reverse order of the installation process.

10.4 The List of Replaceable Parts

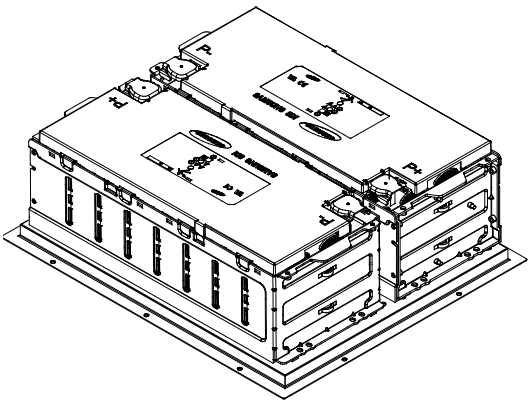
The [Table 10-1] shows the list of parts replaceable for maintenance of this system.
For the parts other than presented here, please refer to the application notes linked on the SAMSUNG SDI website, or contact the installer or the service center.

No.	Part Name	Manufacturer	Part number
1	Li-Ion Battery Tray	SAMSUNG SDI	-
2	PV connector	Multi-Contact AG c/o Stäubli Group	PV STICK
3	Fan1	Minebia manufacturing company	4710KL-04W-B59-E00
4	Fan2	Minebia manufacturing company	4710KL-04W-B59-E00

[Table 10-1: Replaceable parts list]

10.4.1 Li-Ion Battery Tray

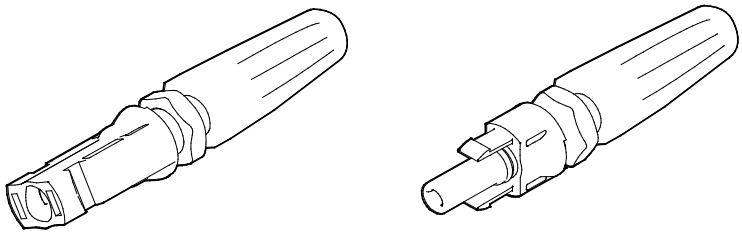
The Li-Ion battery module can be replaced if it fails to work properly. The 3.6 kWh system uses a battery tray with a 2-battery module manufactured by SAMSUNG SDI. When you have to replace the battery module, please contact SAMSUNG SDI and provide the item's name and the serial number of the 3.6 kWh All In One system.



[Figure 10-4: Li-Ion Battery tray (manufactured by SAMSUNG SDI)]

10.4.2 PV Connector

The PV connector can be replaced when it is damaged. The PV connector used in the 3.6 kWh All In One system consists of a PV stick with male/female parts manufactured by Multi-Contact AG c/o Stäubli Group.



[Figure 10-5: PV Connector (MC4)]

10.4.3 FAN 1 & FAN 2

In the All in One System, FAN1 and FAN2 provide air circulation to maintain and regulate the system temperature. The fans can be replaced when they reach the end of their operational life span or fail to work properly. If that is the case, the installer or the maintenance personnel will identify its cause of malfunction and will replace it. The replacement method may depend on the local maintenance conditions. The manufacturer's name and the model number of the fan are as follows: Minebia Manufacturing Company/DC FAN MOTOR/4710KL-04W-B59-E00. For further details, please refer to the Maintenance Manual or contact SAMSUNG SDI Service. The contact address is described in Chapter 13.

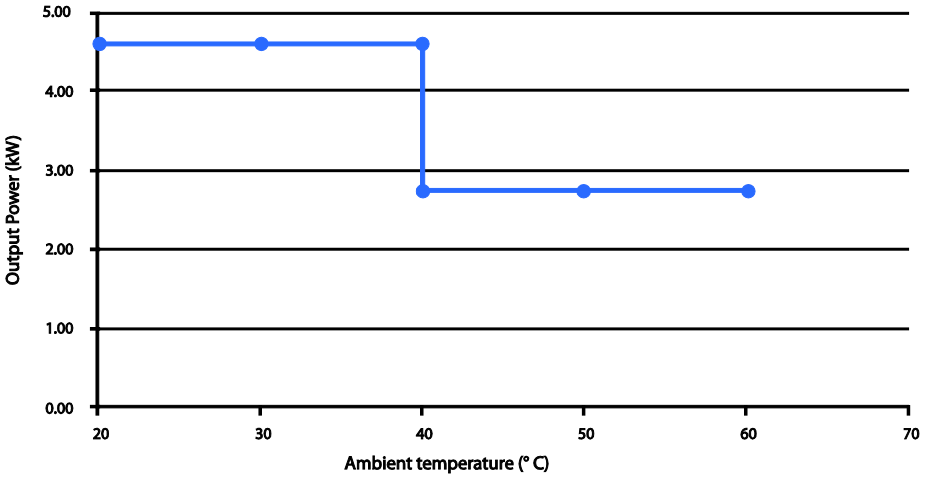
11.Technical Specifications

Item	3600-UK	4600-UK
PV Data (DC)		
Max. input total power	6.6 kWp	
Max. input power per string	3.3 kWp	
Max. input voltage	550 V	
Min. input voltage/Initial input voltage	125 V/150 V	
MPPT voltage range	125 V~500 V	
Max. input current per string	15 A	
Max. input short circuit current for each MPPT	20 A	
Max. inverter backfeed current to the array	Negligible	
Number of independent MPPT trackers	2	
Number of DC inputs pairs for each MPPT	2	
Connection type	MC4	
Battery Data (DC)		
Battery capacity	3.6 kWh	
Battery voltage range/nominal voltage	48.0 V~65.9 V/60 V	
Battery Max. current	46.3 A	
Battery nominal current	33.3 A	
Discharge of depth	90% (6000 cycles)	
Battery technology	Li-Ion	
Nominal DC/DC power	2.0 kW	
DC/DC converter technology	Isolated	
Grid Data (AC)		
Rated power (at 230V, 50 Hz)	3.6kW(*)	4.6 kW(*)
Max. apparent power	5 kVA	
Nominal voltage/range	230 V/184 V~264 V	
Rated power frequency/range	50 Hz/47.5 Hz~51.5 Hz	
Max. current	16A	20A
Max. over-current protection	30 A	
Max. allowed current for fuse protection	32 A	
Inrush current	68.6 A (peak), 100 μs	
Max. output fault current	420 A (peak), 4 ms	
Adjustable power factor range	0.95~1~0.95	
Feed-in phases/connection phases	1/1	

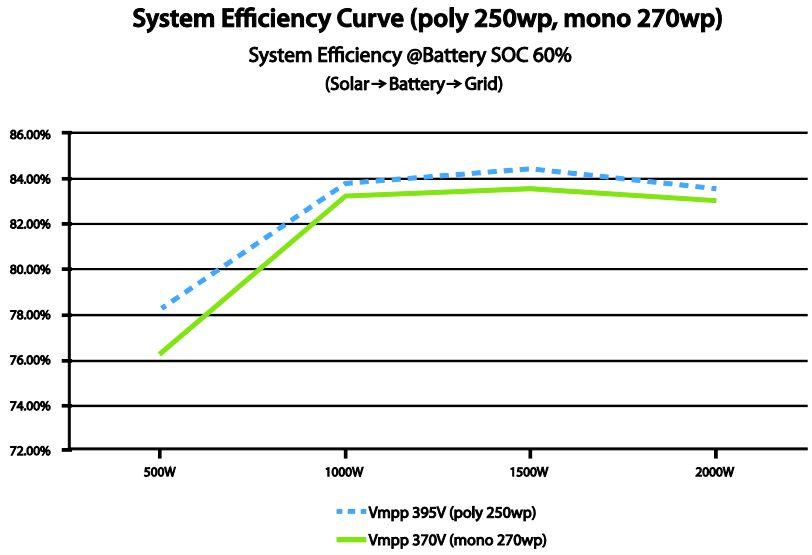
Total Harmonic Distortion. (Total harmonic factor of the output current with total harmonic factor of the AC voltage < 2%, and AC power > 50% of the rated power)	5%
Efficiency (PV to Grid)	
European efficiency	95 % (when power is 4600W)
Max. efficiency	95.5 %
Protective Device	
DC disconnection device for PV	No
Ground-fault monitoring/grid monitoring	Yes/Yes
General Data	
Dimensions (W/H/D)	1000/680/267 mm
Weight	95 kg
Protective class (I, II, III)	Class I
Degree of protection	IP21
Max. permissible value for relative humidity	95 % (non-condensing)
Operating temperature	-10~40°C
Storage temperature	-20~60°C
Noise emission	≤ 50dB(A) @ 1m
Over voltage category	III
Features	
Display	Custom LCD
Communication	LAN, RS485
Energy management system	Integrated
Certificates and approvals	IEC 62109-1, IEC 62109-2 ER-G83/2, ER-G59/3

(*): **It can be set 3600W or 4600W by software when installing.**

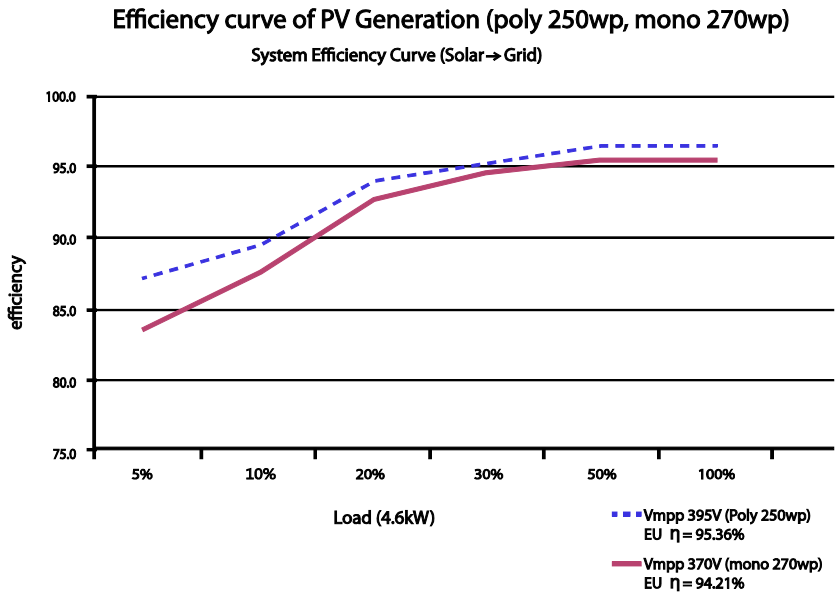
[Table 11-1: Technical specifications]



[Figure 11-1: Derating Curve]



[Figure 11-2: Power efficiency curve of System]



[Figure 11-3: Power efficiency curve of PV Generation]

12.Disassembly

12.1 Disassembly

CAUTION

Risk of injury due to the heavy weight of the 3.6 kWh All in One!
Make sure to have at least two persons move this system.

CAUTION

Lethal hazards may be caused by high voltages in the 3.6 kWh All in One!

CAUTION

Lethal hazards may be caused by voltage spikes if the positive and negative terminal of the battery are shorted by conductive metals.
Stand by for 40 minutes to complete discharging in the system.

CAUTION

When transporting the All In One system with packaged type units, remove the battery tray from the All In One system and transport them separately.

12.1.1 Removing Electric Connection

Push down the DC disconnect switch in the distribution box.

Push down the AC circuit breaker in the distribution box.

Stand by for 40 minutes to complete discharging in the system.

Remove the AC connection terminal in the main body of the 3.6 kWh All in One.

Remove the PV connection terminal in the main body of the 3.6 kWh All in One.

Remove the communication cable from the 3.6 kWh All in One.

Remove the energy meter.

12.1.2 Disassembling the Main Body of 3.6 kWh All in One

Check to make sure that the communication connection line and the external electrical cable are removed from the battery and product

Remove the front case cover of the enclosure as described in Chapter 5.

Separate an electrical connection connector of the battery. (BATT-A: Connector on the system side, BATT-B: Connector on the battery side).

Separate the four signal lines which connect the battery to the Tray BMS.

Lay the main body down to ensure that the tray knob is visible. Work with at least two persons (Overweight).

Unfasten the screw on the battery tray to remove it from the main body.

Lift the battery tray to separate it from the main body.

Place the main body and the battery tray on the packing box. This process is the reverse order of the installation process.

12.2 Packaging

Make sure to pack the 3.6 kWh All in One in the original box.
If you have to pack in the box other than provided by Samsung SDI, consider the minimum weight of 95 kg.
The main body must go into the box completely.

12.3 Storage

Store 3.6 kWh All One at a temperature ranging from -20 to 60℃.

12.4 Disposal

If the battery or the product life has expired, the regulations for the disposal of electronic products in that region must be followed, and if it is not possible, send them to Samsung SDI. The address is indicated in the contact information (Chapter 13).

13.Contact

■ Address: Oskar-Messter-Str. 29
85737 Ismaning (München)
Germany

■ E-Mail: esseuservice@samsung.com

For technical problems or inquiries for use, please contact the installation company.

To receive customer support, the following information is required.

1. Product type: ELSR362-00002
2. Serial Number: AR00460036Z1********A
3. PV module type and configuration
4. Option equipment: Energy Meter Model Name

www.samsungsdi.com

SAMSUNG SDI

United Kingdom (Eng.) 05/2015. Rev1.1